THE

QUARTERLY JOURNAL

OF

ECONOMICS

FEBRUARY, 1900

THE IRON INDUSTRY IN THE UNITED STATES.

I.

A Survey of Growth.

In the following pages I propose to consider the growth of the iron industry in the United States during the last thirty years, and the effect on it of the protective duties which have been maintained throughout this period. The rate of growth has been so extraordinary, and has been attended by changes so striking, as to make the mere chronicle an instructive chapter in economic history. We see here at work on a huge scale the forces which have transformed modern industry, and get vistas of new social problems, as well as more light on the questions which chiefly engaged the attention of economists a generation ago. Both for the interest of the subject itself, and by way of clearing the ground for the discussion of the protective duties, I shall first describe the revolution which has taken place in the American iron and steel industry, proceeding thereafter to those aspects of the industry which are especially connected with the tariff controversy.

Thirty years ago Great Britain was still the world's commanding producer of iron and steel. Notwithstanding half a century or more of almost continuous protection, the United States held but a distant second place. The output of pig iron in the old country in 1870 was very nearly six millions of tons: that in the new country was but little over a million and a half. But between 1860 and 1870 the product in the United States had doubled,—a geometrical progression, which, if maintained, must soon cause all rivals to be distanced. It is much easier, however, to double a small number or a small output than a large one: the rate of growth in the beginnings of a movement is rarely maintained for long during its later course. Yet in this case the unexpected happened: for three decades the geometrical progression was maintained in the output of pig iron in the United States. The product of 1870 had been double that of 1860, 1880 doubled 1870, and 1890 again doubled 1880. The iron industry of Great Britain held its own, and, indeed, between 1870 and 1880 made a notable advance; but it could not match the astounding pace of its young rival. In 1890 the United States turned out more than nine million tons of pig iron, for the first time passing Great Britain, and displacing that country suddenly as the leading producer. The depression which followed the crisis of 1893 caused a sharp decline in the American product, the lowest point being reached in 1894. But with the revival of activity after 1896 the figures again mounted, reaching near twelve millions in 1898, and fourteen millions in 1899. The year 1900 will hardly show a repetition of the feats of the previous decades. The pace of the geometrical progression is too killing to be maintained; yet all present indications are that the close of the decades will show an output beyond the dreams even of five years ago.*

*The figures as to the production of iron in the two countries are easily found in the excellent statistical reports prepared for the trade in the two countries,—the *Statistical Reports of the British Iron Trade Association*, of

This enormous increase, however, has been by no means evenly distributed over the United States. Within the country a revolution has taken place, which is part and parcel of the changed relation to other countries, and which must be followed before the latter can be understood.

The first great impulse to the production of crude iron on a large scale came in the United States with the successful use of anthracite coal as fuel. During the twenty years preceding the Civil War (1840–60) the site of the industry and its growth were governed by this fuel.* Hence eastern Pennsylvania was the main producing district. The supplies of ore near this region were smelted with its anthracite coal, and Philadelphia was the central market. Proximity to the seaboard made foreign competition easy, except so far as it was hampered by the tariff duties; and the very existence of the iron industry was felt to depend on the maintenance of protection. For some time after the close of the Civil War this dominant position of anthracite iron was maintained. In 1872, when the systematic collection of detailed statistics began,

which Mr. J. S. Jeans has long been secretary, and the *Statistical Reports of the Iron and Steel Association*, of which Mr. J. M. Swank has been the equally efficient secretary. For quinquennial periods the output of pig iron in Great Britain and the United States has been as given below. The figures for Germany (including Luxemburg) are given also: the growth there, too, has been extraordinarily rapid: —

	Great Britain.	*United States.*	*Germany.*
1870	5,963	1,665	1,391
1875	6,365	2,024	2,029
1880	7,749	3,835	2,729
1885	7,415	4,044	3,687
1890	7,904	9,203	4,658
1895	7,703	9,446	5,464
1896	8,563	8,633	6,375
1897	8,817	9,653	6,864
1898	8,681	11,774	7,216
1899	—	14,000 (est.)	—

For the United States and Great Britain the figures denote thousands of gross tons of 2,240 pounds; for Germany, metric tons of 2,204 pounds.

*For an account of the industry during this period I refer to my *Tariff History of the United States*, pp. 123–135.

out of a total production of 2,500,000 tons, one-half was smelted with anthracite coal, a third with bituminous coal or coke, the remainder with wood (charcoal). The use of soft coal, which had begun before 1860, became rapidly greater. Already in 1872 it was important; and from year to year it grew. In the periodic oscillations between activity and depression, which mark the iron trade more distinctively than any other industry, anthracite iron shrank sensitively in the slack periods, and barely regained its own in the succeeding periods of expansion. Bituminous or coke iron, on the other hand, held its own during the hard times, and advanced by leaps and bounds with each revival of activity. In 1875 for the first time its output exceeded that of the rival eastern fuel, and since that date the huge advance in the iron product of the United States has been dependent on the use of coke. Indeed, the use of anthracite alone began to shrink at a comparatively early date. It soon ceased to be used on any large scale as the sole fuel, coke being mixed with it for use in the blast-furnace. The production of iron with anthracite coal only has shrunk to insignificant dimensions. What is classed as "anthracite iron" is smelted with a mixture of coke and hard coal; and, even with the aid of the coke, this means of reducing the ore has come to be of less and less importance. Virtually, anthracite coal has been displaced as an iron-making fuel.*

This change is easy of explanation. It is the inevitable result of the greater plenty and effectiveness of coke; and it has been powerfully promoted by the rapid development of the United States west of the Appalachian chain, and the nearness of the coke region to this growing market. Anthracite, at best, is an obdurate fuel. At the same time its strictly limited supply, and the cleanliness and freedom from smoke which make it an ideal domestic

*The production of pig iron by fuel at quinquennial intervals is given below. By way of illustrating the trend over a long period, the year 1855 has

fuel, have maintained its price at a comparatively even level. On the other hand, the almost unlimited supplies of bituminous coal and the feverish competition in opening coal lands and marketing their product have caused an almost uninterrupted fall in its price. Coke has proved, ton for ton, a better fuel than anthracite: the supplies of bituminous coal available for coking are virtually limitless; and the processes of coking have been applied on a huge scale and with tireless energy.

Pittsburg, long ago seen to be destined to become a great iron centre, is situated in the heart of the region where coking coal is plentiful. To this point the iron industry has converged, attracted first by cheap fuel, and soon by other geographical advantages of the region,— its easy access to the growing western country, and the added opportunities of securing super-abundant quantities of the best ore. Pennsylvania has remained the greatest iron-producing State in the Union; but since 1880 it has been western Pennsylvania, and no longer eastern, which has secured to the State its leading position. Since 1890 this district alone has yielded steadily forty per cent. of the enormous iron product in the country; and it is here, and in the other western districts in

been taken as the starting-point. The figures, as in the previous table, indicate thousands of gross tons: —

	Pig Iron smelted with			
	Anthracite.		*Bituminous.*	*Charcoal.*
1855	341		56	303
1860	464		109	248
1865	428		169	234
1870	830		508	326
1875	811		846	367
1880	1,614		1,741	480
	Anthracite alone.	*Anthracite and Coke.*		
1885	250	1,059	2,389	357
1890	249	1,937	6,388	638
1895	56	1,214	7,950	225
1896	111	1,034	7,166	310
1897	21	912	8,465	255
1898	22	1,181	10,274	297

which the same industrial forces have been at work, that we have to study the conditions on which the growth of the iron industry has depended.

The westward movement has been spoken of in the preceding paragraph as affected by the geographical distribution of the fuel. But it has been no less affected by the distribution of the ore supply; and the effect of this in turn has rested on the revolution wrought in the iron trade by the Bessemer process.

The first inventions which made plentiful the iron indispensable for all our material civilization were Cort's processes for puddling and rolling. Through the first three-quarters of the century this was the mode in which the world got its supply of the metal in tough form, usable where heavy strain must come on it. The processes involved at once a considerable plant, complex machinery, and strenuous exertion by skilled and powerful laborers,— conditions which during this period promoted the supremacy of the British iron trade. In the decade 1860–70 the process devised by Sir Henry Bessemer, to which his name attaches, began a second revolution in the iron trade. That process involves a still larger plant and still more elaborate machinery; and it applies machinery more fully to the elimination and subsequent replacing of the carbon on which the toughness of the iron depends. By the new methods the production of mild steel— that is, tough iron — became possible on a vastly greater scale. Bessemer steel has displaced puddled iron in most of its uses. Not only this: the cheap and abundant supply, besides filling needs previously existing, has opened vistas for new plant, machinery, durable instruments of production of all sorts. The first great application of the method was to rails, where the elastic and impact-sustaining steel enabled railway engines and cars to be doubled and quadrupled in size, and to become more efficient in even greater ratio.

Gradually and steadily, new and wider uses were found for the cheap steel. From great ships down to every-day nails, almost every iron instrument became cheaper and better. Wood was supplanted by steel for a variety of uses, and the slow-growing and easily exhausted stores of timber were re-enforced by the well-nigh limitless deposits of ore in the earth's crust. A new domain in nature's forces was opened to man.

But the Bessemer process depends for its availability on special kinds of ore and pig iron,— such as are well-nigh free from sulphur and especially from phosphorus. Variants of the process, free from this limitation, have indeed been applied on a great scale, especially in Germany, where supplies of non-phosphoric ore are not readily available. But the original Bessemer process remains the most effective and the most economical. Ores adapted to it have hence become doubly valuable, and the accessible parts of the earth have been scoured to find them. The deposits of Great Britain in Cumberland and Lancashire contained important supplies, yet not in quantity adequate to the new demand; and the Spanish fields of Bilboa, on the Bay of Biscay, have become an indispensable supplement for the British iron-masters. In the United States, also, some of the sources previously used in the region east of the Appalachian chain proved to be available,— such as the famed deposits, once unique in their ease of working, in the Cornwall hills of eastern Pennsylvania. But the greater part of the eastern ores were too highly charged with phosphorus, or for other reasons unavailable. Here, as in Great Britain, a distant source of supply was turned to. The Lake Superior iron region, long known to explorers and geologists, suddenly sprang into commanding place. Here were abundant and super-abundant supplies of rich and properly constituted ore. These and the equally abundant coal of Pennsylvania were brought together, the iron made from them was converted into steel

by the Bessemer process; and thus only became possible the astounding growth in the production of iron and steel in the United States.

The iron mines of the Lake Superior region stretch in widely separated fields along the lake, from the middle of its southern shore to its extreme north-western end. Intercalated between them is the great copper-bearing peninsula, whose rich yield of that metal has affected the copper trade in the same manner and almost in the same degree as the iron mines have the iron trade. At the extreme eastern end is the Menominee iron field, usually described in connection with the other Lake Superior fields, yet differing from them in important respects. The ore of the Menominee district is easily mined; and it is easily shipped, finding an outlet by the port of Escanaba on Lake Michigan, and thus traversing a much shorter journey to its Eastern markets than that from the Lake Superior mines proper. But it is usually of non-Bessemer quality, and hence can play no considerable part in the most characteristic effects of the new developments. The great Bessemer ore fields of Lake Superior are four in number: in geographical order from east to west, the Marquette, the Gogebic, and the neighboring Vermilion and Mesabi. As it happens, the geographical order has been also, in the main, the order of exploitation. The easternmost, the Marquette, finding its outlet by the port of that name, was the first to be worked on a great scale. Even before the Civil War, mining and smelting had begun; and, as the Bessemer process was more and more largely used, especially after 1873, it was exploited on a larger and larger scale. Here began the digging on a great scale, and the transportation to great distance, of Bessemer ore. After a considerable interval the second field, the Gogebic, began to be worked, in 1884. Lying some two hundred miles further west, along the boundary line between Wisconsin and Michigan, and finding its

outlet by Ashland, on the southern shore of Lake Superior, here was found perhaps the richest and purest Bessemer ore. At about the same time, in 1884, began the development of the most distant of the fields, the Vermilion, lying to the north of the extreme end of Lake Superior, in the State of Minnesota, close to the Canada frontier. Here, too, were great stores of rich Bessemer ore, shipped by the port of Two Harbors, on the northern shore of the lake.

In all these fields the ore has been secured by what we commonly think of as "mining,"—by digging into the bowels of the earth, and bringing the material up from a greater or less depth. But in very recent years the latest and now the most important of the fields has given opportunity for the simplest and cheapest form of mining: great bodies of ore are lying close under the ground, and, when once the surface glacial drift has been removed, obtainable by simple digging and shovelling, as from a clay pit.* Along the Mesabi † range of hills, lying about one hundred miles north-west of the end of Lake Superior, distant not many miles from the Vermilion range, vast tracts of rich iron ore, finely comminuted and easily worked, lie close to the surface. Here a new source of supply was added, offering unique opportunities for exploitation on a great scale. These opportunities were availed of with astounding quickness. The Mesabi field at once sprang into the front rank among the Lake Superior fields, and, indeed, among all the iron-ore fields of the world. Ten years ago the region was a trackless waste. In 1892 it was opened by railway. Towns sprang up, huge steam-shovels attacked the precious ore, and long trains carried it to the newly constructed docks at the port of Duluth. Even during the depression that followed the crisis of

* It should be noted that in the Marquette region, also, the iron ore was secured at the first working and for many years thereafter by open cuts. But the extraction of ore on a great scale has proceeded by underground operations.

† Variously spelled: Mesabi, Mesaba, Messabi, Messaba.

1893 the output from this field mounted year by year. In 1893, virtually the first year of operation, 600,000 tons were shipped from it; in 1894, thrice that amount; and in 1895 it became, what it has since remained, the most productive of the iron-mining districts. A little less than half of the ore is of Bessemer grade. Its physical constitution, moreover, is such that, for advantageous use in the furnace, other ore needs to be mixed with it. Were it all of the prized Bessemer quality, and in the best form, the other fields might be entirely displaced. With the limitations in the quality of the new ore, the other fields still find themselves able to hold their own in the market, though their supremacy is ended by the favored rival.

For many years the Lake Superior mines have been the main sources of supply for the iron ore of the American iron industry. More than half of the total supply had here been secured; and the Bessemer supply, which has been by far the most effective and significant part of the total, has come mainly from this region.*

* The United States Geological Survey, in its successive admirable *Reports on the Mineral Resources of the United States*, has followed the history of the iron fields of Lake Superior, as, indeed, of all the mineral resources of the country. In the issue for 1895–96 (forming vol. iii. of the *Seventeenth Annual Report* of the Survey) a summary description is given, with convenient sketch maps showing the location of the several fields. In *Cassier's Magazine* for October, 1899, Messrs. J. and A. P. Head, two English engineers, published an excellent brief account of the Lake Superior mines, and of the modes of working them.

The relative importance of the fields, the order in which they have been developed, and their relation to the iron ore production of the whole country, are shown by the following figures: —

Iron Ore Production (in Thousands of Gross Tons).

	1880.	1885.	1890.	1895.	1898.
Menominee	592	690	2,282	1,924	2,527
Marquette	1,384	1,430	2,993	2,098	3,125
Gogebic		119	2,847	2,548	2,498
Vermilion		225	880	1,079	1,265
Mesabi				2,781	4,614
Total Lake Superior	1,987	2,466	7,071	10,429	14,630
Total United States	7,120	7,600	16,036	15,957	19,434

For 1899 the Lake Superior product was about 18,500,000 tons.

In this brief description of the Lake Superior iron region, reference has been made to the ports by which the ore is shipped,— Escanaba, Marquette, Ashland, Duluth, Two Harbors. To each of these the ore must be carried by rail from the mines,— sometimes a few miles, sometimes, as with a large part of the Minnesota supplies, a hundred and more. And, with this first movement, only the beginning is made in its long journey. From the shipping port it is carried eastward by water to meet the coal,— the coal being coked at the mines, and in that form made best available for smelting purposes. Some of the ore goes down Lake Michigan to Chicago, where it meets the coal from Pennsylvania about half-way. Some of it goes farther, through Lakes Huron and Erie, and meets the coal at Toledo, Ashtabula, Cleveland, and other ports on Lake Erie. The largest part is unloaded from the vessels at lake ports, and carried by rail to the heart of the Pittsburg coal district, there to be smelted by the coal on its own ground. No small amount goes even beyond,— to the eastward in Pennsylvania, beyond the Pittsburg district, even into New Jersey and New York, almost to the seaboard itself. Hence the cities of Erie and Buffalo have become important ore-receiving ports on Lake Erie, the ore, if not smelted there, going thence by rail on its journey to the smelter. This last and farthest invasion of distant regions by the Lake Superior ore has been promoted by the import duty on the competing foreign ore which seeks to find an entrance by the Atlantic seaboard,— an aspect of the iron trade of which more will be said in the second part of this paper.

The iron-producing region which depends on the Lake Superior ores thus stretches over a wide district, the extreme ends being separated more than a thousand miles. Close by the iron mines are a number of charcoal-using furnaces in Wisconsin and Michigan. The still unexhausted forests of these States supply this fuel in abun-

dance; and charcoal iron, though long supplanted for most uses by the coke-smelted rival, has qualities which enable a limited supply to find a market, even at a relatively high price. Next in order come Chicago (South Chicago) and some neighboring cities, among which Milwaukee in Wisconsin and Joliet in Illinois are the most notable. It is one of the surprises of American industry that iron manufacturing on a huge scale should be undertaken at such points, distant alike from ore and from coal, and having no natural advantages whatever. The coke is moved hundreds of miles by rail from Pennsylvania, and meets the ore which has travelled no less a distance from Lake Superior. Ease of access to the western market gives these sites an advantage, or at least goes to offset the disadvantage of the longer railway haul of the fuel. Other iron-producing points of the same sort are scattered along Lake Erie. At each of the ports of Toledo, Lorain, Ashtabula, Erie, Buffalo, especially Cleveland, ore is smelted, and iron and steel making is carried on. But the coal region itself — western Pennsylvania and the adjacent parts of Ohio — remain the heart and centre of the iron industry. Hither most of the ore is carried; and here the operations of smelting, converting into steel, fashioning the steel into rails, bridges, plates, wire, nails, structural forms for building, are performed on the greatest scale. For some years the natural gas of this region added to its advantages and aided in its exceptionally rapid growth. But each supply of gas exhausted itself before long, and new discoveries did not maintain the inflowing volume at its first level. It was the abundant and excellent coal which formed the sure basis of the manufacturing industries, and the permanent foundation more especially of iron and steel making.

Whether the ore goes to the coal or the coal meets the ore half-way, one or both must travel a long journey, by land as well as by water. One or both must be laden

and unladen several times. A carriage of 800, 900, over 1,000 miles must be achieved, with two separate hauls by rail. Fifty years ago, even twenty years ago, it would have seemed well-nigh impossible to accomplish this on a great scale and with great cheapness. The geographical conditions on which a large iron industry must rest were supposed by Jevons in 1866 to be the contiguity of iron and coal.* But here are supplies of the two minerals separated by a thousand miles of land and water, and combined for iron-making on the largest scale known in the world's history. One of the most sagacious of American students of economics, Albert Gallatin, early predicted that the coal area of western Pennsylvania would become the foundation of a great iron industry, and that only with its development would the American iron manufacture attain a large independent growth.† But he could not dream that his prophecy would be fulfilled by the utilization of ores distant fifteen hundred miles from the seaboard, transported from a region which was in his day, and remained for half a century after his day, an unexplored wilderness.

*Jevons, *The Coal Question*, second edition, chap. xv. Jevons in that chapter looked for important changes in the United States, chiefly from the wider use of anthracite in iron-making. The fact that "the Americans are, of all people in the world, the most forward in driving canals, river navigations, and railways," was noted by him as sure to affect the American iron trade; but even his keen imagination and wide knowledge could not foresee how much and in what directions this "driving" would operate.

†"A happy application of anthracite coal to the manufacture of iron, the discovery of new beds of bituminous coal, the erection of iron-works in the vicinity of the most easterly beds now existing, and the improved means of transportation which may bring this at a reasonable rate to the sea-border, may hereafter enable the American iron-master to compete in cheapness with the foreign rolled iron in the Atlantic district. . . . The ultimate reduction of the price of American to that of British rolled iron can only, and ultimately will, be accomplished in that western region which abounds with ore, and in which is found the most extensive formation of bituminous coal that has yet been discovered in any part of the globe, and this also lying so near the surface of the earth as to render the extraction of the mineral less expensive than anywhere else." Albert Gallatin, *Memorial to the Free Trade Convention* (1832), as reprinted in *State Papers and Speeches on the Tariff*, pp. 179, 180.

The history of the American iron trade in the last thirty years is thus in no small part a history of transportation. The cheap carriage of the ore and coal has been the indispensable condition of the smelting of the one by the other.* And, clearly, this factor has not been peculiar to the iron industry. The perfecting of transportation has been almost the most remarkable of the mechanical triumphs of the United States. Great as have been the evils of our railway methods, disheartening as have been some of the results of unfettered competition, the efficiency of the railways has been brought to a point not approached elsewhere, largely in consequence of that very competition whose ill effects have been so often and so justly dwelt on. The good has come with the evil; and here, as in the whole domain of private property and competitive industry, the crucial problem is how to eradicate the ill and yet maintain the good. In the carriage of iron ore and of coal the methods of railway transportation developed under the stress of eager competition have been utilized to the utmost; and the same is true of the transfer from rail to ship and from ship to rail again, of the carriage in the ship itself, and of the handling of accumulated piles of the two materials. The ore is loaded to cars at the mines by mechanical appliances. At the Mesabi mines the very steam-shovel that digs the ore from the ground deposits it in the adjacent car. At the lake, high

* "Few people who have not actually run a blast-furnace realize what it means to fill the capacious maw of one of these monsters with raw material. A stack of 200 tons' daily capacity, running on 50 per cent. ore, must have delivered to it each day something more than 400 tons of ore, 250 to 300 tons of coke, according to the character of the metal required, and over 100 tons of limestone,—say 900 tons of raw materials. Add the 200 tons of pig iron shipped out, and we have a daily freight movement of 1,100 tons, taking no note of the disposition of the slag. This is 55 carloads of 20 tons each [a modern ore car will carry 30 tons.—F. W. T.]. . . . Starting up a furnace of ordinary capacity calls immediately for the labor, from first to last, of nearly a thousand men; for the use of at least a thousand railway cars, and many locomotives; for perhaps several steamers and vessels on the lakes." A. Brown, *The Outlook in the American Iron Industry*, in the *Engineering Magazine*, October, 1899, p. 88.

ore-docks protrude hundreds of yards into the water. On top of them run the trains, the ore dropping by gravity from openings in the car-bottoms into the pockets of the docks. Thence it drops again through long ducts into the waiting vessels, ranged below alongside the dock. At every step direct manual labor is avoided, and machines and machine-like devices enable huge quantities of ore to be moved at a cost astonishingly low.* The vessels themselves, constructed for the service, carry the maximum of cargo for the minimum of expense; while the machinery for rapid loading and unloading reduces to the shortest the non-earning time of lying at the docks. At the other end of the water carriage, especially on Lake Erie, similar highly developed mechanical appliances transfer from boat to railway car again, or, at will, to the piles where stocks are accumulated for the winter months of closed navigation. At either end the railway has been raised to the maximum of efficiency for the rapid and economical carriage of bulky freight. What has been done for grain, for cotton, for coal, for all the great staples, has been done here also, and here perhaps more effectively than anywhere else: the plant has been made larger and stronger, the paying weight increased in proportion to the dead weight, the ton-mile expense lessened by heavier rails, larger engines, longer trains, and easier grades, the mechanism for loading, unloading, transshipping perfected to the last degree, or to what seems the last degree until yet another stage towards perfection is invented. And evidently here, as elsewhere, the process has been powerfully pro-

* "Every extra handling means more cost. . . . Formerly it was necessary to trim the cargoes; and this had to be done by hand, and gave employment to a great many men at exceedingly high wages. The work, however, was killing while it lasted. Now trimming is in most cases done away with, because the immense size of the freighters renders them stable in any weather; and, if there is any great inequality in the trim of the boat, it is rectified by shifting the water ballast from one compartment to another." Peter White, *The Mining Industry of Northern Michigan*, in *Public. Mich. Pol. Sci. Assoc.*, iii. p. 153.

moted by unhampered trade over a vast territory, and the consequent certainty that costly apparatus for lengthened transportation will never be shorn of its effectiveness by a restriction in the distant market.

Still another factor has been at work in the iron trade, as it has in other great industries,— the march of production to a greater and greater scale, and the combination of connected industries into great single-managed systems. Nothing is more wonderful in the industrial history of the past generation than the new vista opened as to the possibilities of organization. The splitting up among different individuals and separate establishments of the successive steps in a complicated industry — those of the mining, carrying, smelting, rolling, fashioning of iron — was supposed to be due to the limitations of human brain and energy: the management of them all was beyond the physical and nervous capacity of any one man or of any small group of associates. But the range of single management, the size of the unit, have enlarged prodigiously. The increasing application of machinery has made it possible to reduce operations more and more to routine and system, and to lessen the need of independent judgment for every step. Technological education has supplied an array of trained, intelligent, and trustworthy assistants,— engineers, chemists, mineralogists, electricians,— to whom can be delegated a multitude of steps and processes that formerly needed the watchful eye of the master himself. That master must possess new powers and new resources; and the freedom of the modern industrial community, and especially the free atmosphere of our restless and reckless democracy, have stimulated and drawn forth the masterful minds from every social stratum. Hence in all directions we see combinations which unite in one whole a number of associated industries, and, at their best, secure the highest industrial efficiency. At their best; for only

then are the gains permanently secured. The retribution for error in management is as great as are the rewards of success; and judgment has become the most highly prized and highly paid human talent.

The iron trade has shown as markedly as any of the great industries the signs and effects of these new conditions. Not only has the size of individual establishments grown,— this is a phenomenon of long standing, — but the number of industries united in one organization has rapidly enlarged. Iron mines, coal mines, coke ovens, railways, steamers, docks, smelting works, converting works, rolling-mills, steel-works, machine-shops,— these have been combined into one imposing complex. The great iron and steel companies operate iron mines on Lake Superior, coal mines and coke establishments in Pennsylvania, docks and railways, as well as iron and steel works proper. The largest of them, the Carnegie Company, has built a railway of its own, specially equipped for the massive and cheap carriage of ore and fuel, from the shore of Lake Erie to the Pittsburg coal district. At its terminus on Lake Erie (Conneaut) a new harbor and a new city have been created. The economy in production from such widely ramifying organizations is not merely or chiefly in dispensing with the services and saving the gains of so many independent middlemen: it arises mainly from consistent planning of every stage, the nice intercalation of operations, the sweeping introduction from end to end of expensive and rapid-working machinery, continuously supplied under homogeneous administration with the huge quantities of material which alone make possible effective and economical utilization of the great plant.*

* Among the great iron and steel enterprises may be noted the following: — The Carnegie Company, in form an unincorporated partnership, having no shares listed on exchanges or publicly dealt in, has grown from comparatively small beginnings to huge dimensions, its capitalization being supposed to be $200,000,000. It owns or controls the most productive mines of

It is not within the scope of the present paper to weigh the advantages or disadvantages of this mode of organizing industry. It may bring the community face to face with the conditions of established monopoly, or, more probably, in this industry at least, may mean sim-

the Gogebic and Mesabi regions, part of the mines in the Vermilion range, and mines also in the Marquette range. Railways, docks, and a fleet of steamers on the lakes are under its control. Its railway from Lake Erie at Conneaut to Pittsburg, equipped in the most solid manner for transporting ore, fuel, and iron, carries freight at rates which are in the lowest range of rates per ton-mile among American railways. Its iron and steel works are at various points centering about Pittsburg. It owns the greater part of the coal lands and coke plants in the Connellsville district.

The Federal Steel Company, a New Jersey corporation, with a capital of $200,000,000, half preferred, half common, is the greatest rival of the Carnegie Company on Lake Superior. It owns mines in the Mesabi range and in the Vermilion range, with a railway of its own leading to both. It has also a fleet of steamers on the lakes, the great works of the Illinois Steel Company (of which mainly it is the successor) at Chicago, Milwaukee, and Joliet, a considerable railway of its own about Chicago, works at Lorain, Ohio (on Lake Erie), and at Johnstown, Pa.

The American Steel and Wire Company, also a New Jersey corporation, with a capital of $90,000,000, owns mines in the Marquette and Mesabi regions, coal lands and coke ovens, iron and steel works at Cleveland and Pittsburg, and a large number of rod and wire mills scattered over the country from Massachusetts to Missouri.

Other very large enterprises are the Republic Iron and Steel Company (capital, $55,000,000) and the National Steel Company (capital about $60,000,000), both with widely ramifying operations. More concentrated in their operations, but still on a great scale, are the Bethlehem Steel, the Cambria Steel, the Pennsylvania Steel, and the Lackawanna Iron and Steel Companies.

Of a different type are certain corporations to which the term "trust" more specially applies, attempting as they do to control the entire production of certain articles. Among these are the American Tin Plate, the American Steel Hoop, the National Tube Companies.

Even for charcoal iron, where the fuel of ancient times is used, the organization of production has developed on the modern plan. "The only way in which charcoal-iron making appears to be profitable in competition with coke iron is by combining a number of industries which are closely related. For instance, the Cleveland Cliffs Iron Company owns its own mines, cars, is a chief stockholder in a railroad and docks, owns, directly or indirectly, its own line of boats, gets its coal from its own stockholders, owns its own forests, kilns, limestone measures, furnace, and chemical works, where wood alcohol and acetate of lime are made. . . . The wood alcohol is made out of the smoke of the charcoal furnaces led through water. The acetate of lime is also from the smoke." White, *The Mining Industry of Northern Michigan*, p. 13.

ply a farther stage in the development of great-scale production. It may prove, in the combinations of the last year or two, to have been carried so far as to transcend the bounds of human capacity, and may therefore portend a series of break-downs, and the subsequent subdivision and reseparation of the component industries. Whether in its social aspects or in its prospects of permanent productive efficiency, we must await further experience before knowing what gains and losses will accrue, what problems must be faced. But it is clear that great organizations of the productive forces — even though perhaps not so huge as some of those launched of late years — are to be permanent factors in the conduct of many industries, and of the iron industry among them. And it is clear, also, that the movement is not peculiar to the iron trade, and points to no forces specially aroused in the protected industries. Whether in the cheapening of transportation, in the advance of the technical arts, in the organization and management of great consolidations, the forces have been such as directed American manufacturing and mechanical industry at large, and indeed have been at work in greater or less degree in all the countries of advanced civilization.

While the Lake Superior ores, utilized under the conditions just described, have been by far the most important source of supply for the iron industry, a large contribution has come from another source, also,— from the Southern States.

In the region where the States of Tennessee, Alabama, and Georgia adjoin, the conditions once thought indispensable for a flourishing iron industry exist in perfection. Here are great deposits of ore, easy of working; and close by them great deposits of coking coal, no less easily worked. Before the Civil War, these natural advantages were not utilized: the régime of slavery and the lack of

means of transportation prevented any resort to them. But with the quickening of the industrial life of the South, when once the Civil War and the trying days of reconstruction were passed, the mineral resources of this region were developed on a rapidly enlarging scale. Alabama, where the best deposits of coal occur, became a great iron-producing State: here again, though for a less distance and on a smaller scale, the ore made its journey to the coal. The rate of growth was most rapid between 1880 and 1890: the pig-iron output of Alabama rose from 69,000 tons in 1880 to 915,000 in 1890. The large supply of labor at low wages has contributed to the easy and profitable utilization of this source of supply. The free negro has turned miner, and has proved not only a docile laborer, but also,— paid, as miners are, according to the tonnage brought to the pit's mouth,— on the whole, an efficient one. It may be a question how far the low-money wages paid to him are low simply in proportion to his still moderate efficiency, and how far they constitute a factor of real importance in enabling the product to be put on the market at a low price. The favorable natural conditions, when once unlocked by the régime of freedom and the means of transportation that came with it, doubtless constitute the main basis for the growth of the Alabama iron industry. There are other aspects of it which deserve the attentive consideration of the student of social questions,— the conduct and the prospects of the negroes suddenly herded together in the mining regions, and the relations of the two races under the new conditions. But these are matters that lie apart from the present inquiry. For good or ill — doubtless, mainly for good — the Southern iron has taken its place as an important part of the iron supply, with the same rapidity, though with no such dramatic features, as that smelted in Pennsylvania from the Lake Superior ores.

The Southern ore contains phosphorus in too large

amounts to make it available for the Bessemer process; and this has given it a place somewhat apart in the iron industry of the country. The iron made from it has not competed with that from the Lake Superior ore, and has been used chiefly for general foundry purposes. Marketed at a very low price, the increasing supplies have made their way to places further and further removed. Pittsburg itself soon used Alabama iron for foundry purposes; the Western States and the Eastern alike were supplied; in New England it displaced Scotch pig, previously imported in considerable quantity; and, finally, it began to be exported to England itself. These exports are probably not of importance in the permanent current of trade: the iron has gone out chiefly in a period of unusually depressed prices, and even at this time only as ballast for cotton ships. Beyond this strictly limited movement we shall probably see the export of iron from the United States, not in its crude form, but in much more advanced stages. But this is a subject for later consideration. It suffices to note here that the possibility of export, even at nominal rates of freight and in times of exceptionally low prices, shows how vastly changed are the conditions from those of thirty years ago.

The outcome of the great changes in the geographical distribution of the iron industry is shown in the tabular statement on the next page.

In the Eastern District the output, notwithstanding a great increase in the period for which the year 1890 stands, has barely held its own. The total production in 1895–98 was not sensibly greater than in 1872. On the other hand, the Central District has increased its production steadily and enormously, whether in western Pennsylvania itself or in the neighboring States of Ohio, Indiana, Illinois. This is the region where Lake Superior ore is smelted with Pittsburg coal: in and about Pittsburg itself, in the immediately adjacent parts of Ohio,

PRODUCTION OF PIG IRON IN THE UNITED STATES.*

(In thousands of gross tons.)

	1872.	1880.	1885.	1890.	1895.	1898.
Eastern District (eastern Pennsylvania, New York, New Jersey)	1,217	1,610	1,312	2,342	1,390	1,431
Western Pennsylvania alone .	387	772	1,081	2,561	3,549	4,435
Central District (western Pennsylvania and also Ohio, Indiana, Illinois) . .	849	1,502	1,874	4,517	6,019	7,787
Southern District (Alabama, Georgia, Tennessee, Virginia, Maryland)	127	238	539	1,554	1,491	1,785
Other States	356	485	319	790	546	770
Total for the United States .	2,549	3,835	4,044	9,203	9,446	11,773

and at the various lake cities where the ore meets the coal,— Cleveland, Toledo, Chicago, and the rest. Not less striking is the rate of growth in the Southern District, of which Alabama is the most important State.

* In this table the figure for eastern Pennsylvania is for the iron smelted in the State with anthracite, or anthracite and coke mixed, while that for western Pennsylvania is for the bituminous (coke) iron. The separation by fuels, it is true, does not indicate with complete accuracy the geographical distribution. But the iron smelted in Pennsylvania east of the Appalachian chain was formerly smelted almost entirely with anthracite, and is still smelted mainly with a mixture of anthracite and coke; and, at all events, this was the only mode in which the statistics at hand made it possible to separate the eastern and western parts of Pennsylvania.

In the Southern District, Virginia and Maryland are near the seaboard, and might be constituted a group apart from the other States there included. But the iron industry in them, as in the others, is of recent growth, and depends both for ore and fuel on different sources of supply from those of the Northern seaboard region. By far the most important iron-producing State in the Southern district of the table is Alabama.

In the preparation of this table and of other statistical matter, I am much indebted for aid to Mr. D. S. Bobb, of the Graduate School of Harvard University.

While the total production here is far outweighed by that in the Central District, it now exceeds that in the East, and bids fair to continue to do so.

Before we close this review of the forces which have been at work in the iron industry, some other aspects of the subject deserve brief attention. Here, as elsewhere, the labor situation and the trade-union movement have had their influence. But the power of the labor unions among the iron workers has been less in the United States than in Great Britain; and this fact has been of no small consequence. It is true that the Amalgamated Association of Iron and Steel Workers has long been a firm and powerful organization, modelled on the British unions and strong in its bargaining with the employers.* But some of the large iron and steel establishments have been non-union; and their competition, as well as the example they set of a possible cutting-loose from the organized laborers, imposed a strong check on the union's control of the conditions of employment. The largest of the American establishments, the Carnegie Company, thus cut loose from the union, as a consequence of the great strike — fairly a pitched battle — at the Homestead works in 1892. The consequence has been that the American iron and steel master has felt more free than his British rival to push on with new processes, to remodel his organization, to readjust his labor force.

No doubt, in the talk of the average business man, there is much exaggeration of the dictates of labor unions, and many an impossible claim to attend to his own affairs in his own way. But, on the other hand, whatever may be one's sympathy with labor organizations, it is not to be denied that a firmly organized trade-union tends to present a stolid opposition to change and to improvements. This is but human nature. The first effect of a new ma-

* See the account of the organization, by Carroll D. Wright, in this Journal, vol. vii. p. 400 (July, 1893).

chine or a better rearrangement is to displace or discommode some laborers; while the disposition to "make work," however disavowed overtly, is too deep-rooted to permit labor-saving changes to be made without strong though silent opposition. Even where no open resistance is offered, the mere existence of a strong and all-inclusive union, not to be fought without heavy loss, has often a benumbing influence, preventing the very consideration of radical changes, and keeping industry in its established grooves. Such has been one of the effects of the strong organization of English iron workmen (the engineers); and the great strike between them and their employers in 1898 was at bottom due to this consequence of their strength. For good or ill the American iron industry has been comparatively free from this benumbing influence. For good, in that the advance of the art of production has been unrestrained; for ill, in that the workman, as is inevitable when standing alone, has bargained on unequal terms with a powerful employer, and has been compelled often to accede to long hours and harsh conditions.

One other of the social aspects in the growth of the iron industry deserves attention: its connection with the coal trade, and with some of the labor problems that have arisen in that allied industry. The dominant position of the Pittsburg coal district has been repeatedly referred to in the preceding pages. For the iron trade the most important section of that district is the famed Connellsville coke region, lying some fifty miles south of Pittsburg, along the banks of the Youghiogheny River. Here is a level and uniform outcrop of the best coking coal; and from this has come most of the coke used in smelting Lake Superior ores, and, indeed, the greater part of that used in the United States. Important supplies have come also from other near-by regions in Pennsylvania and West Virginia; and Alabama has made from her own coal the coke for smelting her iron. But the Connellsville coke is by

far the most important contributor, and alone supplies more than half of the total used in the country.*

The price of coke has gone down markedly in the last twenty years, in sympathy with the price of bituminous coal generally. Thirty years ago coke at the ovens was sold for $3 a ton. In recent years the price has been on the average not far from $1.50 a ton, and in times of depression less than $1 a ton. Fuel has been turned out for the American iron-master at prices lower than those paid by his rivals in any part of the world; while low rates of transportation have enabled the cheap fuel to be carried to furnaces near and distant, without the loss of this cardinal advantage.

Here, as in the mining and transporting of the ore, and in the practice at the furnace and the mill, cheapness has been secured, but by methods that are, in part at least, vitally different. There has been, indeed, the same bold adventure in opening new sources of supply, the same conduct of industry on a great scale, the same firm organization in direct connection with the iron and steel industries. But the nature of the operations caused cheapness to be attained at the coal mines and coke ovens, not only by machinery and organization, but also, to no small extent, by cheap labor. The mining of coal is mainly pick-and-shovel work, requiring little handicraft skill or trained

* The output of coke in the United States in 1897 — a year in which Connellsville turned out less than its usual share — was as follows (in thousands of net tons of 2,000 lbs.): —

Connellsville proper	6,361
Other Pennsylvania	2,106
West Virginia	1,473
Alabama	1,443
Tennessee	369
Virginia	354
Colorado	342
Elsewhere	
Total United States	13,289

The figures are derived from the chapter on Coke in *The Mineral Resources of the United States*, 1897, forming Part VI. of the Nineteenth Report of the Geological Survey.

intelligence; and this is still more true of the work at the coke ovens. The coal mines of the United States have drawn to themselves the lowest and poorest kinds of manual labor; except, indeed, where machines for cutting the coal have proved applicable, and skilled and intelligent mechanics have consequently been called on to work them. The miners in England seem to have maintained a better relative position. Their trade organization has been strong, the standard of living and of efficiency comparatively high. In the United States multitudes of newly arrived immigrants have been drawn to the mines, partly through deliberate arrangement by the employers, partly through the silent adjustment of supply to demand. There they have huddled, inert, stolid, half-enslaved. The nationalities that have contributed of late years so heavily to our immigration — the Italians, Bohemians, Hungarians, Poles, and what not — have here found employment such as they could at once turn to. In times of activity their condition is passable, and doubtless better than it had been in their homes beyond the sea. In times of depression and low prices the barest living is all they can secure, and sometimes not that. The American or Americanized laborers of higher standards have met a disheartening competition, and have vainly tried to stem the tide of falling wages and half-employment, with the attendant misery, strikes, riots, bloodshed.*

Here once more we touch phenomena that lie mainly outside the scope of the present inquiry. The growth of the coal industry is a subject by itself, presenting peculiarities of its own. "Overproduction" has been its constant cry; and undeniably there has been a pressure on the market of a large and constantly enlarging supply of

*See, among others, the article by J. E. George, in this Journal, vol. xiii. pp. 186, 447 (January and July, 1898). Compare with the same writer's more recent articles in the *Jahrbücher für Nationaloekonomie*, vol. xviii. Nos. 4, 5. The similar conditions in the anthracite region are described by G. O. Virtue in the *Bulletin of the Department of Labor* for November, 1897.

coal. The continued opening of new mines, with all the chances of reaping a fortune from the combination of mining and railway ventures, has proceeded with feverish and excessive activity; and, certainly, it is this gilded opportunity which has caused the systematic agglomeration of cheap labor in the bituminous coal districts the country over. It may be, also, that, even under conditions of comparative stability (as in the anthracite regions, where no new fields are available), the nature of the industry, the extreme difficulty of stopping a mine when once in operation, the strong inducement to work it continuously at its maximum capacity,— such causes as these may lead inevitably and recurrently to mounting output and cut-throat competition. Both sets of causes probably have been at work in bringing about the special severity of periods of depression in the coal and coke districts.

At all events, a bitter competition has intensified the evil social conditions which must emerge where great masses of ignorant laborers are congested in out-of-the-way places. Truck-shops, low wages, semi-feudal conditions, cheap coal, have meant a cheap man. At the iron mines the conditions seem to have favored the better mode of securing cheapness,—vigorous and intelligent labor, using highly elaborated machinery. Such, too, has been, in greater degree at least than at the coal mines, the direction in which improvement has marched in the railways, on the vessels, at the docks, in the iron and steel works. But at the very foundation of the industry, at the coal mine and the coke oven, we have a social sore. Perhaps it is but temporary: this great and vigorous organism of ours may absorb the foul matter, even though it be steadily fed from without by new accretions. But foul it is, and remains. When Jevons, a generation ago, surveyed, doubtless with some excess of pessimism, the coal trade of Great Britain, he warned his countrymen that their great structure of material wealth rested on a foundation

of brutishness and pauperism.* We have been wont to thank God that we are not as other peoples. But the plague is on us also; and we, too, must face the social responsibilities it involves.

Thus the growth of the iron industry illustrates all the extremes of the industrial revolution which has taken place in the United States since the Civil War. Unfettered enterprise, unrestrained competition, have worked their utmost. The eager search for new resources in the earth's crust has gone on with feverish haste. The march of the arts has led to unceasingly wider utilization of the forces of nature. Production on the great scale has advanced, until the huge enterprises seem almost ready to crush the foundations on which they rest or topple over of their own weight. Fabulous riches, and misery and squalor most abject, alike have come with this marvellous transformation; and the twentieth century dawns with new conditions, new problems, new duties.

F. W. TAUSSIG.

HARVARD UNIVERSITY.

*The Coal Question (1866), Preface, p. xxiii.

ETHNIC FACTORS AND THE MOVEMENT OF POPULATION.

A CENTURY of active investigation, speculation, and census-taking, closes without arriving at any satisfactory statement of the laws governing movements of population, although during this entire period the increase or decrease of population numerically has been a matter of intense interest. Beginning with Malthus's discussion of the economic bearing of such movements, the theory of population has received refinement and elaboration in the writings of Darwin and Spencer, and has at last fallen into the hands of a numerous school of anthropo-sociological writers, who have undertaken to bring over into the social sciences the principles of evolution developed in the natural sciences of biology and anthropology. By these writers it has been prophesied that anthropology will "revolutionize the political and social sciences as radically as bacteriology has revolutionized the science of medicine." Anthropology has been destined by anthropologists to work in the social sciences a transformation like that worked upon the statue of Pygmalion, breathing into them the breath of life; destined to lay hold upon those vital laws which have "eluded the grasp alike of theorists and investigators," and to furnish "a scientific explanation of the historical development of civilizations, by showing them to depend upon the processes of biological evolution." All this anthropology has been destined to achieve by developing the "idea of the ethnic factor in society," and insisting upon the importance of that factor in determining social progress.

The success of this new philosophy has been dramatic, and, to continue the simile, its performance has been wonderfully well and cleverly "papered," so that its preten-

sions have set the world of sociologists aghast for the time being. It would seem, however, that students of social phenomena are at last composing themselves to ask whether the breath of life which anthropology has undertaken gratuitously and somewhat ostentatiously to breathe into their science will prove to awaken any new vital energies, and accomplish the transformation, as billed in its announcements, and whether the factitious heaving of the social chest is not too obviously dependent upon diligent working of the anthropological bellows,— whether, in short, the breath of life is not, after all, merely a mechanical manipulation, unrelated to any social functions whatever.

Anthropologists have professed to ground the social sciences in the natural sciences, and to interpret social phenomena as phenomena of the natural world in terms of natural science,— "transmission," "selection," "natural law," "natural evolution." The social sciences are not for them sciences of man living in society, but of natural races entering in as ethnic factors to compose populations, and all social phenomena are phenomena of race. The social sciences are reduced to one science of ethnic factors and of ethnic generation and character. Even the dynamic factors of social evolution are ethnic. Rewritten in the light of modern anthropology, economics becomes a science of the generation of the man behind the machine; he is the prime motor in economic activity; and this prime economic motor is ethnic, a natural dynamic, race-begotten. The point of view, it will be observed, is altogether modern. It introduces the idea of sequence, of evolution and development; and it substitutes that idea for the superficial conceptions of the orthodox economists. The economic man, that manikin of the early English economists, is here endowed with all the attributes of a human being, and becomes generic with the whole natural world, inheriting and transmitting his economic endowments.

I.

Population movements during this century have been chiefly, one may say almost wholly, an economic consequence. The advance in medical science has enabled communities to stamp out and control the ravages of contagious diseases in crowded urban centres of population, has made the devastations of plagues matters of history, and generally reduced mortality rates and increased the mean duration of life, so that economic tendencies have been left free to work their natural effect. The modern industrial régime has created a demand for population, and that demand has been satisfied. The economist therefore associates the increase in population with the increase in the efficiency of labor to produce the necessities and comforts of life; and he does not find it difficult to account for that increase by noting economic development and modern industrial conditions. The two great tendencies of population — (1) to increase its numbers, (2) to increase its per capita consumption of economic goods, material and immaterial — have had freer play than ever before. Taking the population as a whole, it has not been requisite for it to choose whether it would yield to one or the other tendency. It has indulged both tendencies. Wealth and population both have increased phenomenally, so that the social problems of the century are primarily problems of population and of wealth distribution.

Since Malthus wrote his essay, these problems have demanded an ever-increasing share of the economist's attention. Problems concerned with the distribution of wealth are seen to be, in the last analysis, problems of population. The older generation set forth this fundamental relation in the wages-fund theory,— that wages depend on the relation of the wage-earning population to the amount of wealth. This fundamental principle is not materially

modified when the modern economist substitutes the law of increasing returns in certain economic activities for the law of diminishing returns. It still remains true that the individual share is a function of population, whether the law be stated as one of increasing or of diminishing returns, in industry as well as in agriculture. In the phenomenally rapid growth of population during this century the economist finds one of the ultimately determining factors in every income, whether that income be in the nature of wages, interest, or rent. Any movement of population, or of the several industrial groups relatively to one another, causes a reapportionment of the product of industry.

The earlier theories of population have been so often and so elaborately restated as to require no detailing here. That population tends to increase, and that the ultimate limit to that increase lies in the means of subsistence, recommends itself as a bit of practical common sense. It is true of the individual that his existence is conditional upon the acquirement of a certain amount of food, clothing, and shelter; and it requires no mental effort at all to see that this is true also of individuals taken collectively, — that is to say, of the world's populations. To many it appears to be equally a matter of practical common sense that *movements* of population are determined by wealth movements, and some fixed relation is assumed. Such an assumed fixed relation received scientific statement first in Malthus's essay. That there is some interrelation would seem to be sufficiently evidenced in the fact that the increase of wealth and of labor efficiency which has characterized the economic development of this century has been accompanied by an unprecedented increase in population, which relates itself more or less directly with the movement of wealth and of wages. But how these movements have related themselves to one another requires an elaborate analysis of conditions, which cannot

fail to demonstrate the inadequacy of any such simple conception as that stated by Malthus.

No simple statement can be made which holds true of population as a whole and of the several industrial and social groups composing the population. Of entire populations it is true, as of individuals, that the standards of living are very different from one another, but those standards are not simple nor comparable. How, for example, shall we compare oriental populations with those of western Europe? Moreover, it is equally true of groups within any one population that the standard of living maintained within any one group is peculiar to itself, and does not hold for any other group. Within these groups individual standards of living adapt themselves to individual preferences and capacities, subject to certain pretty definite maximum and minimum limits, above and below which the individual standard may not normally move, so long as the individual remains a member of his group. Taking all groups together, the range of individual standards of living maintained within any considerable population is indefinitely great, running into poverty and dependence on one side and on the other into luxury and opulence. For the population as a whole, therefore, the standard of living maintained is a very composite standard of standards themselves composite; and it is this diversity of material standards of living maintained within the several social and industrial groups in any community which makes impossible any such simple interdependency of wealth and population movements as that set forth by early economists. The movement of population ceases to be a function of the increase or decrease of wealth; and for any group which has raised its standard above the subsistence point, increase in members ceases to bear any fixed relation to the means of subsistence or amount of wealth in general.

It would appear, indeed, that there is a point above

which any further increase in material resources, by offering more diverse avenues of enjoyment and activity to the individual, tends more and more to draw off and absorb his energies in a self-centred æstheticism, which may be likened to the seedless flowering of an overfed hot-house plant that has ceased to be self-perpetuating. We are not even yet in a position to say definitely whether the increase in wealth and productive power and of labor efficiency is followed normally by increase of population or the reverse. Historical data and biological argument squint, seeming to support either conclusion indifferently; while, of the various theories of population which have been enunciated from time to time since Malthus wrote his essay, it may be said that their mutually antagonistic assertions are an evidence of the obscurity in which the whole problem of population and subsistence has rested, and an evidence of the multiplicity of influences which must be taken into consideration. And from the diversity of laws, elaborated by more recent writers in different countries, it may be further inferred that the actual laws governing the movement of population are themselves not absolute, but are relative to race, time, and place under consideration,— relative, that is to say, not solely to material welfare of a population (it appears, indeed, that they are often quite independent of that), but relative to the entire plexus of social, industrial, and political organization and status. The experience of the century yields instances of populations living under every variety of material conditions, and manifesting under these conditions no uniformity of wealth and population movements.

Such interdependence, in so far as it exists at all, is true not of population as a whole, but only of certain groups within a population,— of those groups or that group whose standard of living is lowest, purely material, and at the subsistence point. Obviously, for those groups or classes whose standards begin to include more or less

intangible and æsthetic satisfactions,— leisure, for example,— the movement of wealth ceases to bear directly upon vital activities. These groups, which comprise pretty nearly the whole population, have escaped from the limitations set by means of subsistence. Hence their numerical progress comes to relate itself to other than those material goods which compose the community's wealth. By just so far as its standard of living rises above the subsistence point, the group is freed from dependence upon wealth movement, and for those classes within any community which enjoy ample incomes, the non-material æsthetic satisfactions come to be the very items themselves in which the group finds its progress, even its numerical increase or decrease conditioned. So that inferences based upon wealth movements alone have become insignificant and misleading.

The fear imminent in the minds of early economists, lest population outstrip its own economic efficiency to produce the means of subsistence, has been dissipated by industrial progress, and has even been displaced by a fear equally ominous and melodramatic, lest selfish individualistic tendencies, fostered in the accumulation of material resources, shall unduly restrict the increase of population, or at least of certain social groups. Malthus conceived population to be practically always pressing upon the means of subsistence, naturally tending to increase more rapidly than the means of subsistence; and he found the natural consequence of this pressure in war, famine, pestilence, and disease. Darwin pointed out that such agencies were nature's universal agencies for killing off the unfit and selecting the fit. Spencer found in the self-seeking individualistic tendencies, which come to absorb more and more of the individual's energy and devotion, powerful neutralizing agencies interfering with the Darwinian process of natural selection. But none of those writers sounded the depths of modern pessimism

which is all-embracing, and finds its ultimate refinement in a fusion of the several theories of population enunciated by Malthus, Darwin, and Spencer, and in the assertion that, under modern conditions of social selection, it is the unfit and the economically inefficient who are free, and who tend to multiply in accordance with the Malthusian doctrine, and to crowd out the fittest; while, on the other hand, the energies of the fittest are more and more absorbed in their efforts to maintain their own individual social standing, and to rise higher in the social scale, so that they work out their own annihilation.

We are concerned here with one aspect of this *fin-de-siècle* pessimism; namely, with that consummate elaboration of it which is grounded in anthropology, and in the assumption that economic progress in any community tends to dissociate certain ethnic factors in population.

The special product of the modern industrial system appears to be what is commonly designated the "factory population." This element in the population, which hardly existed a century ago, has come to constitute a numerous factor; and, if we ask how this has come about, we are face to face with a very perplexing problem. Opinions rest ordinarily upon one or the other of two assumptions, which may be briefly stated as follows: (1) that the factory system has reduced the miscellaneous elements of our industrial population, the handicraftsmen and skilled laborers, to the ranks of the unskilled; or (2) that the factory system has enabled the originally unskilled and inefficient element in the population to increase and multiply.

All conditions concerning the general welfare and progress of our industrial population may be reduced to one or the other of these theses: one asserting the enslavement of a larger and larger numerical factor in our population; the other, amelioration and progress of a more or less submerged and inefficient element in the original popula-

tion. Those who hold the latter opinion ordinarily explain the apparent numerical increase of the unskilled on the ground that this increase is apparent, but not real, the appearance being due to the aggregation of the unskilled, originally disseminated throughout the population, in industrial centres, where they constitute a more or less conspicuously isolated group. In its simplest form, the question resolves itself into the following dilemma: whether the factory population of to-day is lineally descended from the artisans of yesterday, or from a more or less generally diffused, unskilled, and inefficient element in the original population; whether, in brief, the great industrial revolution of this century has raised a submerged tenth a point in the social scale, or has reduced other elements in the population to a uniformly low standard of material and social welfare. The adoption of one or the other of the above theses, as on the whole giving the truest summing up of the industrial revolution, does not, of course, involve a denial of the very obvious fact that both processes have been going on together, and which of the two is accepted as the truer summing up will depend a good deal upon individual animus and sympathies.

This industrial group has certainly grown by accession; like the population of a great city, it has drawn unto itself and subjected to its conditions of uniformity elements of all kinds in the population. It has absorbed the skilled handicraftsman, the small manufacturer and tradesman; and it has lifted into its ranks and made self-supporting the economically inefficient. Unlike our great urban populations, however, the factory population has manifested a high rate of natural increase. It has enabled those reduced or raised to its ranks to generate their own kind under less exacting conditions than those under which the socially "more fit" generate their own kind.

It follows that the growth of population during the century may be resolved into the rapid numerical increase of

this industrial group within the population, either by accession or out of its own natural movement, or both; and, since that growth is an economic consequence, the economist is particularly interested in the anthropological implication that it can be interpreted in terms of ethnical factors.

Anthropologists have performed one great service in calling attention to the selective agencies at work in every community, and in insisting that it is not the absolute increase or decrease of a population in numbers that is of significance; that real significance attaches to the *character* of the population. What is significant is the movement of social classes relatively to one another,— the nature of the selective agencies at work. When it becomes apparent that about one-half of a generation fail of representation in succeeding generations, it becomes of prime importance to ascertain what is the character of the selection. Is it natural or artificial? is it confined to certain social classes, or does the selective process work out its ends in all classes alike? or, finally, is it a selection of ethnic factors?

It is to those selective agencies at work in society that anthropologists have directed their attention. In the following criticism of anthropological speculation it is not intended to question the fact that selective agencies are at work modifying the character of modern populations. But I propose to consider at some length the character of anthropological conceptions, and to show that the introduction of the idea of ethnic factors in any discussion of population movements, so far as it is at all significant, is wholly unwarrantable and hopelessly confusing when applied to modern industrial conditions. The chief selective agencies are admittedly economic, as already indicated; and economic selection has broken down, and everywhere tends still further to break down ethnic classification and selection or stratification.

II.

Our whole problem, approached on its anthropological side, resolves itself into the difficulty of giving to the term "ethnic factor" any scientifically accurate definition. In view of their general attitude of mind, one would seem wholly justified in requiring of anthropo-sociologists a clear explanation of their own meaning, when they employ that term. Yet for a quarter of a century its scientific definition has been a stumbling-block in their way. Little progress has been made even towards an abstract conception of what the term "race" or "ethnic factor" should denote; and, certainly, with regard to any concrete application of these terms,— either to the people composing the world's population at large or to the factors of European populations in particular,— it cannot be said that there is to-day any considerable unanimity of opinion among anthropologists themselves.

Such criticisms as anthropologists have brought against the common employment of the term "race" are generally admitted to be entirely justified. As commonly employed, that term has no scientific value, since it is employed on the one hand to distinguish mankind from the rest of the animal kingdom, as in the phrase "human race," while on the other hand it is applied to groups of population not at all ethnically differentiated, but living perchance under separate political systems or speaking a common language, as where the Swiss people are spoken of as a race distinct from the German or French or Italian races. Mankind has been generally conceived to be composed of several rather simple racial groups,— of red, brown, yellow, black, and white races, for example; and, if to this main classification be added the Esquimaux, the Australians, the Oceanic peoples, and such further refinement in treating of the white race as is suggested in the

terms "Aryan," "Indo-European," "Caucasian," "Germanic," and the like, our anthropology is brought pretty nearly up to date.

Not quite, however. In the last few years anthropology plumes itself upon the fact that it has been getting rapidly away from some uncritically simple notions.

The more common of the simpler classifications of population is that based upon language. Those who speak French are conceived to be of the French race, those who speak English of the English race. The Greeks, we are assured, were a race "speaking a common language." Latin races are those people whose language is more or less related to the Latin tongue. Such simple classifications may, to a certain extent, disregard political boundaries, but it is not an uncommon result for a people speaking a common language to come to have a common political organization, and, where the political grouping happens to coincide with differences in language, racial differentiation is pretty certain to be inferred by those unfamiliar with the history of race migrations.

Such inferences, it may be observed, find some semblance of justification where political institutions and social customs, as well as physical environment within political boundaries, have served more or less to modify the character of peoples subject to them. But although national types of character may have developed, where political boundaries have remained for a considerable period of time unchanged, political institutions have never in western countries been sufficiently permanent nor sufficiently isolating to develop entirely homogeneous populations; and the intermingling of races which in primitive times resulted as a natural consequence of military exploitation and possession continues unabated in peaceful migration and infiltration of races,— to-day a natural consequence of economic exploitation, of social advantages, or of political exigencies and administration.

This mobilization of the world's population is immensely facilitated by that breaking down of geographical barriers which has accompanied the opening of rail and water ways of communication, and by the extensive requirements of the commercial world. One consequence of these new conditions has been that national types of population have been losing even that sharpness of definition which they have sometimes manifested in the past.

Accordingly, one finds little warrant for making community of language or of political institutions, conjointly or severally, bases of ethnic differentiation to-day. Language migrates too easily from race to race, while political organizations exert an influence too impermanent to be of natural worth. Such classifications and groupings may suggest or even coincide with generic ethnic boundaries, but the coincidence is an accidental contingency.

Scientific value, if it attaches to any of the more popular tests of ethnic origin, attaches to that based upon pigmentation of the skin, for here, certainly, is a mark of natural differentiation. Each of the great color groups composing the world's population is, however, a composite of minor groups sufficiently differentiated from one another, homogeneous in character, and distinct in origin to warrant the application to them severally of the term "ethnic." What is popularly conceived as the "white race" is made up of diverse ethnic factors, and within each of the great color groups racial differentiation does not necessarily manifest itself in any color shading of the skin. Furthermore, groups ethnically homogeneous often manifest considerable variations in skin pigmentation, which may perhaps be attributed to climatic influences. We may have a kind of racial sunburn in the peoples of relatively dark complexion living in southern or tropical lands, and of racial bleaching out in the lighter peoples of the north. The direct influence of sun and wind upon skin texture and pigmentation is a fact of individual ex-

perience, the effects of which may easily be conceived to have become themselves permanently registered. Such an influence is, of course, exerted independently of racial lines or groupings, so that the color test of race origin has to be applied with great caution. On the whole, therefore, it must be admitted that even this test is too simple to be scientifically reliable or adequate as a test of generic origin.

Accordingly, modern writers do not accept any of the popular or pseudo-scientific conceptions of what constitutes an ethnic factor. Natural differentiation is something more than political organization, and is not necessarily indicated in language spoken nor in skin texture or pigmentation. And probably we have here reached the final statement upon which there is complete unanimity of opinion: all are agreed that ethnic character is in itself evidence of isolation, more or less complete, for a longer or shorter period of time; and all are agreed that this isolation is not scientifically determined in any of the above schemes of classification. The conditions of the development of ethnic character are such as to make any further definition of the term "ethnic factor" arbitrary,—a matter of opinion, upon which there is ample opportunity for disagreement, since *the exact amount of isolation necessary to develop ethnic character cannot be scientifically determined.*

So far there is perfect accord. None of the more careful writers are at all disposed to maintain that the simpler notions of the ethnic factor are at all adequate, and they have sought in anthropology a scientific account of such factors entering in to compose extant populations. The chief service of anthropology, however, seems to have lain in its destructive criticism directed against these naïve conceptions of race. In its own conception confusion still reigns, and the intangible and imaginary character of its own conceptions is clearly in evidence in

its attempts at ethnical classification of European populations.

Anthropo-sociologists have undertaken to resolve European population into two or three dominant ethnic factors, which enter in to compose the several political groups in varying proportions, one or another element predominating and giving character to the whole population. The fusion in varying proportions of these ethnic elements gives rise to national types. The history of any political group of population establishes the fact that they are none of them ethnically pure. The French people are partly of Gallic origin, partly of Roman, and partly of Teutonic, each of these original factors being itself highly composite ethnologically The Gauls, according to M Levasseur, contributed to the formation of the French nation a "complexity of ethnological elements," the Romans "their language and civilization," and the Germans "their institutions and blood"; and there must be added to these elements the Spanish, Moorish, Ligurian, and Celtic populations, as well as the fragments of indigeneous races of prehistoric origin. Other European populations are no less complex ethnically.

The difficulty in the way of establishing generic lines in so heterogeneous a population as that of modern Europe is obvious. At what point in the differentiation of social character shall ethnic character be conceived to emerge out of the complexity of ethnological elements? We begin to get some idea of the anthropological conception in the statement of a recent writer that "in anthropology the term 'race' — alas! so often lightly used — corresponds in many respects to the word 'type' in zoölogy."* By the same writer we find twice quoted approvingly Denicker's definition of the term. "Race," he says, is "in the present state of things an abstract conception, a notion of continuity in discontinuity, of unity in diversity.

*Ripley, *The Races of Europe*, p. 598.

It is the rehabilitation of a real but directly unattainable thing," or, to adopt Professor Ripley's terminology, race is an "ideality."

Let us see how far these definitions take us on the way to a clear comprehension of the term. Not far, it would seem. This unattainable ideality, this "continuity in discontinuity," "unity in diversity," circle-within-circle conception of race,— what does it signify? Obviously, before it can signify anything at all, we must know what this something is which is involved in this something else also undefined. Is the race, or ethnic, factor a group of one man or two? and what characteristics constitute a "type"? How far we have progressed becomes obvious when we reflect that a tree and a stone and a beast of the field are each severally within themselves "continuities in discontinuities," "unities in diversities," and, in our abstract conceptions of them, "unattainable idealities." So of everything else in the material world, as of the world itself. We are told that a race is an "hereditary type," but we are not told what a "type" is. To any definition of the term "type" all the difficulties attach which attach to a definition of the term "race" itself. In the statement that race is an "hereditary type," our only added notion, which lies in the term "hereditary," carries no content, since every essential capacity and character in a man is hereditary. Education may train and develop: it cannot endow character. Original capacities and traits are all of them inherited, so that we are not at all in sight of a definition of our term "race" or "ethnic factor" until we get a complete enumeration of those particular traits and qualities which, inherited, shall be conceived to constitute a "type." We are accordingly forced to take up the raw material out of which anthropologists have constructed their idealities, without any preconceptions as to what shall constitute a race, in the hope of giving to the term, as a result of more or less extended observation, some descriptive content.

A cursory examination of this raw material shows that anthropological races are physically differentiated idealities,—idealities constructed out of inherited physical earmarks, such as color of hair and eyes, stature, facial features, and cephalic index. For the social anthropologists the chief race traits are tallness or shortness of stature, lightness or darkness of complexion, longness or roundness of head; and out of these they propose to construct the unities in diversities. There is (1) a tall, light, thin-nosed, long-headed race, (2) a short, dark or light (?), thick-nosed, round-headed race, and (3) a short, dark, thin-nosed, long-headed race.

Not that these races exist at all, but the ear-marks exist. In the extant population of Europe, anthropologists find these evidences of generic origin floating about and combining with one another indifferently. There are tall people who are dark, thin or thick nosed, and long-headed; and others who are round-headed. So of the short people: they may be light, thick or thin nosed, and long or round headed indifferently. All possible combinations exist, and on the whole some of the more irregular combinations seem to outnumber considerably the regular combinations. No one of the possible combinations of traits is without a considerable population; the more careful observers, indeed, find the mathematical possibilities insufficient to furnish them with a sufficient number of types, and are forced to have recourse to further differentiation. They find two sorts of longness: (1) that of the northern Teutonic peoples and (2) that of the southern Mediterranean peoples. There are at least two sorts of blondness: (1) the grayness of the Alpine stock and (2) the yellowness and blueness of the Teutons. Finally, the nose may have an indefinite number of features besides longness or thickness. Where any of these combinations fail to explain the character of a population or lead to classification obviously absurd or incon-

sistent with history or topography, the population must be set down as *sui generis* or an indigenous one, of which the Basques and certain populations in Brittany are examples.

Disregarding these little groups of isolated populations, which do not lend themselves easily to the anthropologist's scheme of classification, let us turn to the mass of European population and its ethnological constitution.

It has been observed already that there is no group of population in modern Europe which presents these marks of generic origin in any fixed combination. No relation can be established between stature *per se* and cephalic index or complexion or facial feature. Now it must be borne in mind that, inasmuch as there is ample evidence, statistical, historical, and physiological, going to prove that "no continental group of human beings with greater diversities or extremes of physical type exists" than the European population, therefore anthropology proposes to "do away at one fell swoop with most of the current mouthings about Aryans and pre-Aryans, and especially with such appellations as the 'Caucasian' or the 'Indo-Germanic' race." Having discarded these simple notions, the modern anthropologist sets about to determine ethnic composition in his own way. "In a given population," he asks, "are the blondes more often tall than the brunettes, or the reverse? Is the greater proportion of the tall men at the same time distinctly longer-headed or otherwise? and the like." *

Upon the answer to such inquiries, modern anthropology bases its classification of European population. The data brought together here are of fundamental consequence in making the classification, and warrant careful consideration. Contrary to common opinion, anthropology does not find the answer to these inquiries to be "constant and

*Ripley, *The Races of Europe*, p. 105. The whole of chapter vi. and Appendix D are of particular interest in this connection.

persistent." * In the face of the evidence gathered on this point, Professor Ripley is led to remark as follows: "Let it be boldly confessed at the outset that in the greater number of cases no invariable association of traits in this way occurs. This is especially true among the people of central Europe. The population of Switzerland, for example, is persistently aberrant in this respect. It is everything anthropologically that it ought not to be." And we are urged to keep in mind that "in no other part

*In Appendix E to Professor Ripley's *Races of Europe* we find a summary of the evidence got together on this point, which is sufficiently significant to be quoted at length: —

"It appears that, while normal associations of these traits [*i.e.*, head-form, stature, and blondness]— corresponding, that is to say, to our constitution of three ideal racial types — occur in the outskirts of Europe, no clear evidence of the law is offered in its central and most complicated part. Thus, respecting *head-form* and *stature*, Arbo in Norway finds the dolichocephalic individuals generally taller; and, in Italy, Livi asserts that the dolichocephalic individuals are shorter. In each of these cases, it will be noted, the associations are normal, since the long-headed type in Italy, if Mediterranean in type, ought to be less tall. Weisbach in Austria, and Salzburg also discover a normal Teutonic combination, the long-headed men being somewhat taller. The same is less clearly true in Poland (Elkind), in Aveyron (Lapouge-Durand), and in Valais (Bedot). In Baden, Ammon at first found his dolichocephalic men taller, as a rule; but his later work fails to confirm it. Among other observers, Ranke in Bavaria, Anutchin in Russia, Collignon in France, and Olóriz in Spain discover no relation whatever between the two traits in the same individual. Eichholz for Russia is also doubtful, and his data are in any case too limited to give reliable results in this matter.

"Turning finally to the association of *head-form and pigmentation*, again we find Arbo asserting a normal Teutonic relation in Norway. Dr. Livi also finds his dolichocephalic men of Mediterranean type darker in complexion, or rather in color of hair, as they ought normally to be. Von Hölder and Regel give evidence for Würtemberg and Thuringia respectively to the same effect; namely, that their long-headed individuals more often than otherwise tend to be relatively light. Ammon, however, in his latest work, asserts it of the Savoyards, but gives no precise data to verify the statement. In Moravia, Matiegka's figures for three hundred and ninety-five individuals show too slight a tendency to be of value. Most other observers discover no relation whatever between the two traits, dolichocephalic individuals being as apt to be light as dark. Among these are Ranke, for Bavaria; Anutchin, for Russia; Majer and Koperniki, for Galacia; Elkind, for Poland; Eichholz, for Russia; and Bedot, for Switzerland. Two observers, on the other hand, Weisbach in Austria and Emme in Russia,— the latter, however, with a very limited series of forty-one persons only,— find their dark individuals rather more long-headed."

of the world save modern America is such an amalgamation of various peoples to be found as in Europe."

The extent to which this amalgamation of ethnic factors has taken place may be inferred from the following statement: "We are thus reduced to the extremity," writes Professor Ripley, "in which my friend Dr. Ammon, of Baden, found himself, when I wrote asking for photographs of a pure Alpine type from the Black Forest. He has measured thousands of heads, and yet he answered that he had not been able to find a perfect specimen in all details. All his round-headed men were either blond or tall or narrow-nosed or something else they ought not to be." Yet the Alpine race, of which Switzerland and the Black Forest are strongholds, is one of three great races into which it is proposed to resolve the heterogeneous population of modern Europe. The scholar whose name, perhaps, more than any other is associated with the sort of work we are considering, confesses that he has never found even one individual manifesting the several race traits in combination.

The anthropologist who admits that his races have no existence to-day has no cover at all, since, as he is quite aware, "history, and archæology long before history, show us a continual picture of tribes appearing and disappearing, crossing and recrossing in their migrations, assimilating, conquering, or being absorbed," so that our anthropological races not only do not exist,— we have no evidence that they ever existed; and there is no tendency certainly to-day towards isolation and the building up of pure-blooded ethnical groups of population in Europe, which indicates that these "races" ever will in the future succeed in associating themselves or in assembling their respective "traits."

All this seems at least to place the social philosophy of these writers upon a new footing. They are not any longer engaged with realities, but with subjective ideals.

Inasmuch as the anthropologist, on his own confession, cannot produce any considerable number of individuals — in fact, no single individual — who manifest in combination the race traits, the query naturally presents itself to those of a more or less sceptical turn of mind, How has he come to fix upon certain combinations rather than others? If one is to be relieved of all responsibility in the way of producing individuals, not to say groups of population, manifesting the combination of race traits selected, why not take any combination? or, rather, why take any combination at all? If it is not necessary to find the traits combined, may we not as well make our races tall-short races, light-dark races, round-long races, or races manifesting any other possible combination of traits?

In view of the inconclusive character of the evidence on this point, as indicated in the passages quoted above, the answer which the anthropologist makes to this query is highly unsatisfactory, since it assumes exactly that fixity in relationship of the several race traits which his data do not at all substantiate. "In one population," writes Professor Ripley, "color of hair and stature gravitate towards certain definite combinations. Not far away, perhaps in another thousand men drawn from the same locality, the same stature is found to manifest an affinity for certain types of head-form. It may require scores of observations to detect the tendency, so slight has it become. In still another thousand men, perhaps, a third combination is revealed. These all, however, overlap at the edges. Of course, we should be glad to find all our physical traits definitely associated in completeness in the same thousand recruits, were it not denied us." But the evidence summed up by Professor Ripley in the Appendix to his book all goes to show that (perhaps) we do *not* find any groups manifesting even such slight affinities as to "require scores of observations to detect the tendency." To assert that perhaps we may find these traits associated and

manifesting affinities for one another within populations at large begs the issue. Having shown that the evidence is inconclusive, the anthropologist proceeds upon the assumption that where in any population we have long-headedness there we find also associated *more* tallness and blondness and thinness of nose than we find where we have shortness of stature,—not individually associated, but floating about in the population as a whole, and so manifesting an "affinity"; and, where we have roundness of head, there we find *more* shortness, brunetness, and thinness of nose floating about similarly. And so the anthropologist constructs his combinations without reference to the individual, and has his ideality of two races. But the evidence cited does not bear out the assumption that such affinities exist; and, if they do exist, it must be borne in mind that they are confessedly empirical affinities, not associated under any known law. We are not told how a race defined to be an "hereditary type" can be constructed out of combinations of traits not at all fixed in transmission. We are told that it "matters not that never more than a small majority of any given population possesses even two physical characteristics in their proper association." We even find anthropologists who go further, and require of their "small majority" that it shall possess only one single trait; namely, a high or low average cephalic index, the racial line being determined arbitrarily by the individual observer. Such a classification as this last makes up in consistency and clearness what it lacks in broadness and probability of relation to facts. It constitutes the cephalic index a test of race origin, and abides by that regardless of other traits. Doubt here attaches to the reliability of the test itself. Those who construct their ideality of race on a broader basis of four associated race traits, however, cannot be allowed to reason on the assumption that any two traits out of the four, when found associated in any individual, determine the ideal

racial character so constructed, since, obviously, where but two traits out of four conform there are an equal number of non-conforming traits. Where it appears that such individuals constitute only a "small majority" of the total population, there is still less ground for determining the racial character of the population than for the individual. Where the non-conforming traits are contradictory, obviously they exactly counterbalance the conforming traits; and, where they are neutral, they have no less value in determining racial character than the traits selected as typical.

Because the several selected race traits are themselves severally persistently transmitted from generation to generation, it does not, of course, at all follow that any particular combinations of these traits are so transmitted. As we have seen, no such affinity has been established. Anthropologists themselves cannot produce any conclusive evidence that a child inherits these traits in any combination or association fixed in heredity. The race traits "float" about freely, showing no hereditary affinity for one another: the affinity is at best merely an empirical one of juxtaposition. Where in any population the anthropologist finds a high percentage of tall individuals, and in that population also a high percentage of blond individuals, he concludes he has evidence of a tall, blond race-stock; and, if in the same population, he finds a high percentage of long-headness, he adds this trait to the other two. The majority of the population, as we have seen, may be neutral, or at most possess only one of these race traits. While no individual possesses all of them, that makes no difference: the population belongs to one or the other of the two or three great races, according as it manifests one or another of these "typical" traits in a relatively high percentage. The great majority of the population, being neutral, are disregarded. Disregarded, that is to say, in determining the race character of the popula-

tion; but, once that is determined in the manner above indicated, this great mass of neutrals is thrown in with the typical individuals, and the whole population declared to be of one or another race, for which the entire combination of traits is assumed.

III.

The inconsistency of this assumed fixity in combination of traits for the race, with their complete freedom of association in the individual, is obvious; and it has forced the more logical anthropologists to modify their theory in its application, and to constitute a hierarchy of race traits where there is an incongruity of association. Certain relative values have come to be attached to the several tests of race origin. In substituting this hierarchy of tests, the fixity-in-combination ideal is clearly modified, if not altogether abandoned, exactly to the extent that this hierarchy is insisted on. For, if there is a fixity in association, one race trait carries the other race traits with it, if not in the individual, at least in the population as a whole; and, to the extent that fixity in combination obtains, one test of race origin is as good as another. It is found, however, that, for instance, in certain considerable groups of population, stature seems to have succumbed to environmental influences. Where food supply has been scant, growth has been stunted; and, where food supply has been abundant, stature has increased independently of race stock. Again, it is suggested, as noted above, that the color of the skin, and perhaps of the hair and eyes, may be more or less a matter of climatic environment, or, in same localities, of altitude. At least, as a test of race, complexion is somewhat fickle and erratic. In view of these facts, anthropologists have naturally come to regard stature, complexion, and, it may be added, facial features also, with suspicion, and have constituted the cephalic

index — the relation of the length of the head to its breadth — the surest test of race. Where other traits conform to the "ideality," they are grouped around the cephalic index; and, where they are "what they ought not to be," they are considered of secondary consequence or disregarded altogether.

Unfortunately, however, anthropology in its appeals to the cephalic index has overreached itself and proved too much, and has fallen into confusion as to what, after all, the cephalic index is an index of,— whether, indeed, it is an index of anything at all, and, if so, whether of race origin or of social selection.

The more usual method is to assume that the index is an index of race or of individual fitness to survive, according as one or the other assumption best fits into the argument in hand, and to shift the assumption to suit the immediate purpose. If we turn to one of the most illustrious of modern anthropologists, George Vacher de Lapouge, we shall find the cephalic index worked in its double function, now as an evidence of race, and again as an index of individual fitness to survive. On the evidence of the cephalic index chiefly, the population of northern Europe is apportioned by this author between two great races,— *Homo Europeus* and *Homo Alpinus*,— the dolichocephalic blond and the brachycephalic dark race. Here the cephalic index is an index of race origin. But, having done with the cephalic index as an index of race origin, the author proceeds to elaborate certain laws of social selection which he conceives to be at work within any population. He finds that the dolichocephalic are the more successful socially and economically, more progressive, more daring, and migratory. They are the wealth-holders and fighters. They seek the large cities, and leave their more brachycephalic brethren to live in the country districts. The child of dolichocephalic migrating parents is apt to be more dolichocephalic than either parent. The

dolichoid is prominent in politics, and in many other ways manifests individual qualities peculiar to him. Here the cephalic index is clearly taken as an index of individual efficiency, ability to survive, and of other individual characteristics.

It is not the intention here to examine the evidence brought forward in support of these several laws or of the general racial classification of population, but, accepting the generalizations as they stand, to ask whether they are consistent with one another.

Clearly, Lapouge's laws of social selection imply that the cephalic index varies with individual qualities of mind and character, that the relation of these qualities to the index is fixed. Those anthropologists, however, who are disposed to reserve the index as a test of ethnic origin, usually deny that there is any close relation between individual capacity and the index, as does Lapouge himself when he is establishing his race categories. Lapouge and those of his school point out that the genius of the race is much less evenly distributed among the dolichocephalic peoples than among the brachycephalic; that, if the brachycephalic peoples more seldom rise to the intellectual and moral heights attained by the dolichoids, neither do they sink to the level of animal stupidity maintained by certain social strata of the dolichocephalic peoples. When, however, Lapouge comes to develop his laws of social selection, the minutest variation in average indexes is sufficient to account for individual variation in temperament and efficiency. The laws are founded upon the narrowest margins of difference in indexes, and they depend upon an absolute fixity in relationship between individual variation of character and individual index. Such a fixity of relationship is clearly inconsistent with Lapouge's own theory of race differentiation, and he and other writers have got together a considerable mass of data tending to break down the belief that

any such fixity exists. Obviously enough, the cephalic index is at best only an ear-mark, in itself of no intrinsic value. It bears no relation even to the capacity of the brain cavity, which may vary indefinitely without any variation in the index. As if to give point to this fact, it happens that the two races which are, according to Lapouge and his followers, in all essential qualities most differentiated from each other,— namely, the dolichocephalic blond race and the Mediterranean race,— have each of them a low cephalic index and similar cast of countenance. So that the association of index with ethnical character is a matter of chance, and there is no relation of cause and effect. And it is still more difficult to conceive any such relation establishing itself in the individual between the relative length and breadth of the head and the capacity or fitness to survive. If the relation were one involving the weight or size of the brain, it might more conceivably bear some such fixed relation to individual variation.

Now the cephalic index may be an index either of ethnic generation or of social selection. It cannot be of both. If it be an index of individual capacity and fitness to survive, it cannot be accepted as an index of ethnic generation; and, if it be accepted as an index of ethnic generation, it cannot serve as an index of individual fitness to survive. In the one case, all of Lapouge's laws of social selection depending upon the cephalic index must be thrown over; and, in the other case, his whole classification of the European population into three races must be given up.

It may, however, be urged that the cephalic index is for the individual an index of certain qualities, and, when applied to races, an index of racial character. It is not essential to our purpose to examine the evidence which might be adduced in support of this view. It suffices here to note that race character is a very different thing from race origin. Even if we accept the cephalic index as an

index of character, which there would appear to be no very good grounds for doing, it throws no light on the generation of present populations. If two populations present one a low and the other a high cephalic index, on this theory we are not justified in assuming distinct racial origins, since the difference in present average indexes may very well be accounted for as a consequence of social selection. The low average index is evidence merely that the process of selection has worked itself out more completely in that population than in the population showing a high cephalic index. This would be a sufficient explanation, however marked the differentiation in indexes might be; and it would appear to be the simple and natural explanation, where the differences in index are so slight and uncertain as they are for European populations. Social selection and natural selection might easily have worked out each different results under the different conditions of social and physical environment which obtain within the continent of Europe. One need mention only one environmental influence at work which may easily be conceived to have occasioned a differentiation of the peoples of northern Europe from those of southern Europe; — what greater contrast can be found in physical environment under which populations survive at all than that between the climate and topography of the peninsula of Norway and Sweden in the north and of Italy in the south of Europe? Such diverse conditions might easily in a few generations, not to say centuries, develop differentiation in a homogeneous race stock. Professor Ripley seems to have clearly enough in mind the efficiency of environmental influences in bringing about physical transformations. "Who," he asks, "can say that the originally broad-headed peasantry in Burgundy are not tall because of the surpassing fertility and material prosperity of the Côte d'Or, with the addition, perhaps, of a strain of Teutonic blood?" And, preserving the form in

which the question is here put, we may ask, Who can say that the differences in average cephalic indexes for different populations are not due to the uneven working of Lapouge's laws of social selection in different populations?

It is not contended here, however, that differentiations of the various racial types in Europe may be set down to environmental influences, but only to suggest possible factors in the generation of group characteristics. And this leads directly to one other criticism which must be brought against the natural philosophy of modern anthropology in its attempt to define the ethnic factors in European populations. Anthropology tries to eliminate all environmental influences which may have modified the physical types of population. Its races are hereditary, and its philosophy is genealogical. The question of race is not one of differentiation, but of generation. The attempt is to follow strains of blood, and "to eliminate all modifying influences of environment, physical or social; of selection in its various phases; and of those other disturbing factors, which, together with the direct and perhaps predominant influences of heredity, constitute the figure of man as he stands."

It is difficult to see where the line shall be drawn between hereditary influences and those which disturb the working of heredity. Go back in the history of mankind as far as anthropology can get, the differentiation of man from the animal kingdom is found to be a matter of more perfect adjustment to environment. Environment is the matrix, and to conceive man apart from environmental influences is as impossible as to conceive a cast without a mould. Heredity apart from environment has no meaning, since the present generation's whole inheritance is nothing but the sum of man's impact with environment in the past; and no anthropologist can get back to a time when man as he stood was not, exactly as he is to-day, a result of the three influences, social and physical

environment and heredity, the last of these factors being resolvable into influences of social and physical environment in the past generations *ad infinitum*. Even a "few decrees of Polish kings," if their consequence has been to depress the average stature of the Poles, have to that extent created a new sub-type of people; and the question whether we shall consider this sub-type a distinct race is not at all concerned with the cause of the differentiation, but with the amount of the differentiation itself. If the differentiation is considerable enough, we certainly have a distinct race, just as truly as we should have had, if the influence exerted by a political decree had been exerted by physical environment working for ten thousand years instead of a few decades. The only question is whether the differentiation has become ingrained and hereditary so far as succeeding generations are concerned, and whether it is sufficiently marked in character to constitute a race or sub-race, a type or sub-type, or only a variation too inconsiderable to be regarded in general classifications. In classifying populations, the anthropologist may of course, if he chooses, disregard those differentiations in extant population which are the immediate effect of environment and not transmitted to succeeding generations. Such differentiations may be disregarded so long as there is evidence that the inherent and permanently fixed race character is intact, and ready under a new environment to reassert itself. If the stature of a people has for generations been stunted by scant food supply or by other conditions unfavorable to physical development (such as employment of young children in factories, for instance), the anthropologist may disregard such modification of the race type, provided he believes the original type would reassert itself under other conditions,— not otherwise. The question does not concern the origin of the differentiation at all, but only its fixity,— its fixity, not with reference to past generations at all, but entirely with reference to future generations.

As already observed, anthropology attempts to eliminate all environmental influences, and to consider heredity pure and simple; but, wherever it draws the line, those ethnic traits or qualities which it sets down to the account of pure heredity are themselves no less the product of environment than the qualities which it disregards. The consequence of this quest for a residuum of race character, which may be regarded as the content of pure, disembodied, dematerialized heredity, has been the elimination of race character itself, and the substitution for it of what are conceived to be certain physical ear-marks of generation. Of these the cephalic index is the chief, because it is conceived to have offered the "greatest resistance to environmental influences." The mind and body and soul of the race, since they offer less resistance to environmental influences, may have changed in every essential character, if only the head retains its form; so that the head really becomes evidence, most certainly not of race, but merely of its own origin; and it may not be evidence of that, but simply of its own present existence. The essential quality of an ear-mark is that it shall be attached to something, and in this essential quality the ear-marks of anthropology fail. Why cephalic index, since it is dissociated from any essential traits, rather than size of the foot or length of limb or those creases in the palm of the hand which have given rise to the profundities of palmistry? *

In sum, the term "race, or ethnic, factor," employed in anthropo-sociological writing, has not as yet received

* Protest must also be entered against the method of deduction employed in anthropology. In any given population, if it appears that 60 per cent. have blond hair, or 75 per cent. or even 99 per cent., that fact does not enable the anthropologist to classify the 40 per cent. or 25 per cent. or even 1 per cent. which has not blond hair. So with regard to stature, the predominance of tall men in a population does not give any grounds for anthropological classification of the short individuals; nor does the predominance of blue eyes serve as a basis for classifying the persons whose eyes are not blue. If the cephalic index is an index of ethnic generation, it must be so for the population individ-

any definition which warrants its recognition as a scientific term. The ethnic factor in European populations to-day is the Holy Grail of modern anthropology: it is here, there, and everywhere, a mysterious apparition; and it is gone! If it could be grasped, it would solve all problems and breathe new life into all social philosophies. Even as the Christian socialist finds the ultimate solution of all economic problems in the propaganda of his interpretation of the Christian religion, as the anarchist finds his solution in the quality of human kindness which he conceives to be choked by government regulation, and as the socialist looks to the institution of an omnipotent beneficent government for his solution, so the anthropologist finds his in the generation of ethnic factors. But, alas! as applied to European population, the term "race" or "ethnic factor" remains an arbitrary and conventional, if not altogether visionary ideality.

IV.

The appearance of ethnic or race character in any population group is due to socialization of individual character, and is a natural consequence of isolation and selection of ancestry. Such isolation and selection may attach to

ually and severally, not collectively, since an average index may be entirely misleading; and where a population, such as that of Europe, is of heterogeneous character, there is no justification whatever for assuming that any single index is an index for the population as a whole.

We have not in the text at all considered the technical difficulties which have heretofore involved the application of anthropological tests of race origin,—difficulties which make any comparative study of the data got together almost impossible. Of these difficulties, such may be mentioned as, for example, those attaching to the establishment of any uniform color scale for determining accurately the degree of blondness or brunetness of a population; or such as attach to the various methods of taking head measurements for determining the cephalic index; not to mention individual variations and inaccuracies due to the great number of observers and recorders working independently of one another. Where the margins of variations are so slight, these difficulties are often sufficient to vitiate the whole train of reasoning based upon the comparative study of data.

social castes and classes within a population, creating natural types. The conditions of generation and inheritance within any isolated population group, however numerous or diversified in character it may be, tend normally to further the process of socialization, and so bring about ultimately an absolute uniformity of character. Such uniformity, where it manifests itself to-day, is, therefore, in itself no evidence of descent from homogeneous ancestry. The original progenitors need not have possessed any traits in common. But socialization of character in any isolated population group, while it is only a question of time and of a sufficient number of generations, in fact, never is completely accomplished. A large residuum of individual, unsocialized qualities always remains. If the process be conceived to be completed within any group, further progress or decline, evolution or devolution, must then depend upon environment; and selection necessarily ceases to be a matter of human choice. Such a state may well be designated the biological stationary state, and it is the state towards which all populations naturally tend. The population of the Chinese Empire may be cited as more nearly than any other exemplifying this state; for here is a population which has attained an advanced stage of civilization, wherein, however, all progress has ceased. No factors remain to be incorporated; and the Chinese seem helpless to modify the character of their civilization in any way, the process of elimination and selection being no longer operative. Here socialization has progressed so far as to equalize many of the sexual differences, and there would appear even to be a tendency for the qualities of youth and old age to fuse.

We may not, however, suppose the selection and diffusion of race qualities to proceed uninterruptedly or freely; and it is only intended here to note that the existence of ethnic groups in any considerable population is an evidence of socialization of character, and that this process

is at the basis of all natural generation. It is the process which has, in accordance with the principles of natural selection and evolution, built up and differentiated types and species throughout the natural world. Race character may have developed from a fusion of elements originally diverse or not; but, however diverse the original factors, from generation to generation they tend to combine and to disseminate themselves throughout the population, and to formulate themselves into a race character which comes to be transmitted from generation to generation. Ethnic character thus results from the socialization of individual character, and is evidence of a period of isolation.

Elementary ethnic, or race, character may be conceived as existing in the fundamentally human qualities, moral, intellectual, and physical, by which mankind differs from brute-kind. To these qualities, which are the common inheritance of the human race, others are added to constitute the individual a member of some particular ethnic group, and others, still, to constitute him an individual in that group. Whether the residuum of individualistic traits be large or small, the natural process of socialization tends to encroach upon and absorb more and more of them from generation to generation.

Obviously, the inheritance and transmission of character is a matter of immense complexity. Children inherit from both parents, and normally may be expected to partake equally of the character of both parents. As a matter of fact, however, children inherit very unequally from parents, the children of the same parents differing considerably in character according as they "take after" one or the other. Furthermore, the combination of excellences or of defects inherited by the child from both parents may and does result in the formation of entirely original character in the child. A child inheriting the excellences of both parents excels both, while one inheriting the

defects of both is a degenerate. Strictly speaking, except in those qualities where the parents resemble one another, the child need not normally, and probably will not really, resemble his parents at all. It is exactly in those qualities which the parents possess in common with one another that race character first manifests itself, and our problem is to show how these qualities become common.

While it is true that the child usually manifests a character which is original, that character, so far as it is inherited, is nevertheless determined by the character of parents. Its originality consists in the combination of selected traits of character. Individual variations may thus be very great. Yet in any considerable population they tend to offset one another, so that, to simplify the facts, they may be disregarded for the population as a whole, and the child treated as inheriting equally from both parents. On this supposition the process of race-character building is susceptible of simple statement. Every child represents a fusion of the original qualities of two individuals belonging to the preceding generation. Children of the third generation represent a fusion of original qualities possessed by four individuals constituting the original population; children of the next generation, eight; of the next, sixteen; and so on *ad infinitum*. But ultimately a generation is reached where intermarriage may occur without in any way affecting the formula of inheritance, since the population has come to possess its original progenitors as a common ancestry; and, consequently, no original combination of inherited traits can normally occur in the children of succeeding generations.

It need hardly be said that our conception of inheritance and transmission is here highly conventionalized for purposes of symmetry and simplicity. There is every reason to suppose that social groups within the original population would not intermarry freely, as supposed; and, if they did, it is not true that individuals born of similar parents

are similar. But, on the other hand, it must be borne in mind that the number of generations may be sufficiently great to neutralize eccentricities and break down social barriers. Our assumptions are, nevertheless, such as entirely to remove our train of reasoning from the real world; and we shall now attempt to work back into the complexity involving the problem of inheritance and transmission.

In the population of France, which we may take for illustration, we have to deal with a population of approximately forty millions, and one which does not, of course, intermarry with the freedom and regularity supposed,— a population within which classes persist in more or less complete isolation; in short, a population in which any such process as we have supposed is checked on every side, and which is receiving each year new factors for assimilation from immigration of foreigners. With such a population the establishment of a race character must extend over a considerable period of time, and can never be completed. The mere geographical distribution of the population would effectually prevent complete socialization of character, as would also the maintenance within the population of social and industrial groups between which intermarriage is slight.

Any considerable population, such as that of France, may be descended from some originally monogenous race group, or the various social classes within it may be so descended. As these original groups are broken up, the race character appears, at first in simple fundamental characteristics, and gradually it extends to more complex attributes of character. In any population of forty millions, however, individual ancestry may vary greatly; and what is true of race character is true of individual character,— it is determined chiefly by individual ancestry, just as race character is determined by race ancestry. A recent French writer has well said that, of those influ-

ences which determine individual character and conduct, that which is transmitted from one's ancestors is most important, the inheritance from one's immediate parents being second, while the influence of one's immediate social and physical environment is of least importance.

The real process of ethnic generation is thus seen to bear no resemblance to the process elaborated in modern anthropology. Ethnic factors cannot be conceived as existing in solution in extant populations: every generation creates new ethnic qualities; and every generation is a generation of race, a new ethnic creation determined in past generations, and in itself certainly determining the character of future generations. When, however, a fusion of ethnic factors occurs, the original factors are not held in solution in future generations: they are annihilated in a new creation of ethnic character, which may not resemble the original factors at all. The present population groups of Europe do not hold in solution ethnic factors which may be traced back from generation to generation,—at least in no other sense than the sense in which it may be said of the Gulf of Mexico that it is composed of the Mississippi and Missouri Rivers, with their tributaries, and other rivers flowing into the Gulf. One might almost as well seek to reconstruct the Mississippi River from an analysis of sea water as seek to reconstruct original ethnic factors in the population of Europe from an analysis of extant population or from mechanical measurements unrelated to the really essential race qualities.

It is, of course, true that these suffusions of ethnic character have taken place in accordance with natural laws,—just as the mingling of the fresh waters poured into the Gulf has occurred in accordance with physical laws,—and these are in the last analysis the workings of the forces determining social evolution, natural selection, and survival. It is only the complex workings of these forces which give the appearance of chance here, as in

the sequence of combinations in a kaleidoscope. There is, of course, no other sort of chance than that which signifies ignorance of causes or inability to analyze the workings of laws. So, for all practical purposes, social evolution must remain a matter of chance so long as the forces back of it lie beyond our control or escape our scrutiny or accurate determination.

It is our peculiar privilege, living at the present day, to follow the course of human events, as they are recorded in history, for a longer period of time than any other generation of men has ever been able to do. Written records made thousands of years ago are receiving their more and more correct translation into written history, and anthropologists are now literally unearthing the history of man through indefinitely long geological periods. They find human skeletons and fossils imbedded in river and cave, deposits which establish beyond doubt that man was a contemporary in Europe of the mammoth mastodon and the woolly rhinoceros, the cave hyena, and other uncanny creatures unknown to-day except by their fossil remains or preserved bones. They trace the progress of man as a sort of wild animal living in natural caves, using rough stone implements, through entire geological periods so remote and so extended that the most ancient of Egyptian monuments seem, in comparison, a work of yesterday. This history reaches back into the animal kingdom until its ages are measured, not in thousands of years, nor in hundreds of thousands of years, but in inconceivable millions. No generation before our own has delved so deep in the past. None has been able to get back so far, nor able to conceive history as we do to-day. It has been reserved for our age to write out the history not of our own time and people alone, but of the human race itself; to follow the rise of social institutions and their decline; to see peoples become civilized and sink back into barbarism. We find this process of rise, supremacy, and dissolution

so often repeating itself that we have come to conceive societies, like individuals, to have their natural periods of growth, majority, and decrepitude. The conception of society as an organism, so common among sociologists to-day, lends further sanction to this idea that every society has a natural life-period which it lives through, if it is not cut off unnaturally; that this period varies from society to society, as does the duration of life from individual to individual, but that, given the vital initial social energies in any community, its normal life-period is thereby determined. In the succession of social institutions, civilization has moved painfully and uncertainly, now forward, now sinking beneath a flood of barbarism, and again emerging. The toilsome progress has been one of displacement, of crowding out, of suffusion of new strains of blood, of social rape, assimilation, and slavery. The advance which we call evolution has been like the movement of a wave along the beach, dissipated into foam and spray, gathering into its recoil some few fragments, and yielding its forward impulse to succeeding breakers. In the development of the human race the ethnic factor is the surface wave, a ripple sweeping over the face of the social deep, causing it to bubble and swirl, and to rise upon its crest, —but for a moment only. The fundamental traits of the natural man as he stands to-day, of whatever genealogy or race,—are they not primarily those of the gorilla clothed and become gregarious? These natural traits constitute the continent against which ethnic waves have been beating and wearing, working imperceptible metamorphoses.

How unreal and academic the interpretation given to this process of natural generation in modern anthropology, more particularly when that interpretation is applied to the great population movements of this century! Anthropology has undertaken to interpret those movements in terms of ethnic generation and selection in face of the

obvious fact that those movements have been almost entirely an economic consequence, and that economic development during this period has tended, and tends more and more, not to dissociate, select, and establish ethnic factors, but, on the contrary, to break down all natural differentiations, to break up and obliterate ethnic stratification, and to substitute a classification and hierarchy of social groups dependent upon economic efficiency and function. The economic standard of worth does not recognize the ethnic factor; nor are ethnic lines, even where they are discernible, at all observed in the composition of any of our social or industrial groups, certainly not in that great industrial group which has contributed most to the numerical increase of population during the century,— the wage-earning group.

If now it be asked, What is the clear duty of the anthropologist in elaborating a theory of population? it must be replied that his task is to present the facts, not idealities,— not to assert unities which have no existence in the diversities of fact, not to simplify his scheme of classification till it loses all definition or relation to reality, and, above all, not to generalize on meagre and partial data. Anthropologists began their work with an attack upon the old notions regarding the races of man. They made clear the inadequacy of that naïve classification which conceived mankind to be composed of white, black, yellow, red, and brown races,— of Caucasian, Indo-European, and Germanic races. It is unfortunate the anthropologists should now have fallen into the same error themselves, and attempt to resolve the heterogeneous population of Europe, which they rightly conceive to be "the most mixed population in the world," into three simple ethnic factors. A glance at the composition of any of our social groups, from the urban slum populations upwards, shows that ethnical cleavage runs vertically through them all, and demonstrates the deceptive character of any idea such

as that implied in the term "ethnic stratification," or horizontal cleavage. The old notion of race had at least some basis in natural science. The black people of the earth certainly are sufficiently differentiated from the white to warrant the statement that they form a race distinct,—a race which exists, not in the mind of an anthropologist, but in swarms of millions of people. So of the yellow races, so to a lesser extent of the other naïve races. The idealities of modern anthropology, however, have but a narrow basis, if any, in natural history. And, finally, even if the races of the modern anthropology ever had any existence outside the mind of the modern anthropologist, they ceased to exist long since. They have fused with one another indiscriminately. The physical ear-marks of race have gone one way, while the mental attributes of race have gone another. Anthropologists do not present any data to justify the assumption that the cephalic index carries any mental attribute or any character with it; nor can any such contention be maintained in the face of modern psychology, which more and more is coming to regard the head-form as irrelevant to mental capacity or character, certainly where the size of the brain is disregarded. Phrenology, like astrology, has had its day; and the sort of racial phrenology with which modern anthropologists are engaged is bound to go to the same limbo. Sociology may then breathe again naturally.

JOHN CUMMINGS.

HARVARD UNIVERSITY.

THE NEW YORK CANALS.

THE railroad traveller speeding across the State of New York gets occasional glimpses from the car window of a narrow channel of water; while here and there he may pass a bluff-bowed, weather-beaten boat, preceded by a team of straining horses, which drag the lumbering craft by painful inches along the route. The battered boats, the toiling horses, and the general air of neglect and dilapidation contrast strongly with the solid four-tracked road-bed on the neighboring railway, busy with long trains of freight cars drawn by powerful locomotives; and it is easy for the stranger to believe that he has found one relic of by-gone days in this new and modern continent. In truth, however, the situation is more significant of the rapidity of American development. For it is hardly three-quarters of a century since DeWitt Clinton's great undertaking was accomplished. Within less than half of that time the now decadent ditch was still the all-important transportation route between the lakes and the Atlantic. Even a decade ago it was a factor of no mean degree in the east and west movement of commodities. The rapid transition to the present situation is worthy of attention as a striking feature in the economic history of the United States; and an examination into the causes and consequences of the change may indicate whether the present situation is to be the final outcome or has been due to factors which may be altered so as to bring about a revival of canal transportation.

I.

The early history of the canals of New York State does not require extended notice here, and a brief account

will serve to introduce the discussion on the events of the last three decades.

The main object in the construction of the original Erie Canal was to reach the grain fields of Western New York. During the first decades of this century the fertile lands of the Genesee country (peculiarly adapted to the raising of cereals) were being rapidly settled by emigrants from New England; but the region was almost completely isolated from a market, so that both the eastward movement of agricultural and forest products and the return movement of imports were closely limited by the difficulties and high cost of transportation. Goods and passengers were moved only by wagons and stages over roads of the most primitive kind. Freight charges from Buffalo to Albany were $100 a ton; and even by the water route as far as Cayuga Lake,— navigable for boats of not over sixteen tons,— the price of transportation from Schenectady to Seneca Falls was $32 per ton.

The Erie Canal from Buffalo to Albany, opened in 1825, provided the much-needed outlet for this region. It had four feet depth of water, and was navigated at first by boats of thirty tons. Freight rates from Buffalo to Albany were reduced at once to $10 a ton; and from this figure rates became steadily lower, as the system of canal transportation developed. DeWitt Clinton's estimate of 400,000 tons to be accommodated by the canals was realized in the first year. As early as 1837 the Erie and Oswego Canals carried more than double that amount; and the 250,000 tons on the Champlain Canal (opened in 1822, from the Hudson to Lake Champlain), and smaller amounts on the branch canals then completed, swelled the total traffic to 1,171,296 tons. From this figure the traffic steadily increased. It doubled itself within ten years, and by 1854 was over 4,000,000 tons a year,— ten times the estimated traffic at the commencement of the undertaking.

Although constructed primarily to supply a State need,

it soon became evident that the benefits of the Erie Canal were to extend far beyond the State boundaries. The settlement of the regions bordering on the great lakes was much facilitated by the new transportation route; and the products of this section, as well as of western New York, reached a market through the Erie Canal. Already in 1837, 30 per cent. of the cereals transported on the canals came from beyond New York; and the proportion of such traffic rapidly increased, adding alike to the canal traffic and to the commercial importance of New York city and state.

This influence of the canal on the commercial development of New York was one of the most important results of the opening of the water route to the lakes. Before 1820 the county of Philadelphia had a larger population than New York county; but by 1830 New York had gained first place in population and commercial importance in the United States,— a position steadily maintained and made more secure in the decades following. Along the canal and at its termini, Albany, Troy, Utica, Rome, Syracuse, Rochester, and Buffalo at once developed from villages to considerable cities. It has been through the growth of these commercial centres that New York, without large mineral resources or special industrial advantages, has secured and maintained its place as the most populous and most wealthy State in the Union.

The astonishing success of the original canals led to the construction of the numerous branch canals,* and also to the early adoption of a scheme of enlargement which should adapt the Erie Canal to the constantly increasing traffic. In 1835 work was begun on this project, to provide a route navigable for boats drawing six feet of water and of two hundred and forty tons' capacity,— three times the capacity of the largest boats which could be used

* The most important was the Oswego Canal, from Syracuse to Lake Ontario, opened in 1828.

on the original canal. The actual construction, however, proceeded but slowly. In the early forties there was a complete suspension of all new work; and, when in 1854 work was resumed, it was again without energetic efforts, and not until 1862 was the enlargement of 1835 nominally completed.

Despite this delay in executing the needed enlargement of the main trunk route, the canals of New York, from the time of their construction until after the last third of the century had begun, held undisputed their position as the main transportation route from the lakes to the seaboard. The first railroads were built, not as rivals, but as adjuncts to the canals, collecting and distributing the waterway freights in isolated districts more economically than stage and wagon routes, but in no way interfering with the main lines of traffic. Even after railroads had been constructed across the State from Buffalo to Albany and New York, and the tolls which the State at first collected on railroad freight were abolished (in 1851), the canals continued to carry the bulk of the traffic. As late as 1862 the ton-mileage of canal traffic was more than double the combined ton-mileage of the New York Central and the Erie Railroads. That was a maximum year; and in the years immediately following both canal and railroad traffic declined, but without materially changing their relative positions. In 1866 the canal traffic comprised 60 per cent. of the freight movement across New York State. During the decade then ended, railroad traffic had doubled and canal traffic had increased nearly 80 per cent.

It is in the development of internal commerce since the Civil War that the decline of the canals is to be traced. Up to that time the railroad freight traffic had been confined to the more finished and costly merchandise, which could afford to pay much higher rates of freight in order to secure quicker delivery. But the grain, flour, and lumber to the east, and coal to the west, which comprised

the great bulk of freight moved, continued to go by canal. As early as 1863 we may notice a decline in the flour traffic on the canals; and within a few years this had been reduced to one-fourth of the former traffic, and before long had almost disappeared. The other important items, however, showed no falling off at this time, and indeed showed an upward movement in the years of expanding business from 1866 to 1873. But it was also true that the railroads were now securing a share of the bulk commodities, and that their freight traffic as a whole was growing at a much more rapid rate than that of the canals.

Before 1868, practically the whole of the grain arriving at New York came by way of the canals; but by 1872 30 per cent. came by railroad. In the latter year the total tonnage on the New York railroads was 8,025,923, on the canals 6,673,370 tons. The total movement was on the railroads 2,260 million of ton-miles, and on the canals 1,594 millions. The canal tonnage for this year was the largest ever carried on the canals, but the ton-mileage was barely equal to that for 1862.

In the years of depression following 1873, canal traffic began to show a positive reduction in volume, the Champlain Canal, however, carrying about the same tonnage as in the years before 1872. In 1876 but 4,172,129 tons were moved on all the canals, less than two-thirds of the traffic for 1872. The railroads meanwhile were showing a steadily increasing traffic, though with smaller increments than in the years before 1873, and were thus gaining an increasing share of the total traffic. In 1876 the New York railroads carried 14,983,600 tons of freight, more than three times the aggregate canal tonnage; and the receipts of grain by rail at New York were 57 per cent. of the total receipts.

The events of these few years indicated to some the early abandonment of the canals; and a writer in *Scribner's Magazine* at the time said of the Erie Canal: "In five

years from this time [1877] it is probable that only 25 per cent. of the tonnage of 1862 will continue to exist. The rate of tolls that can be exacted from the small tonnage then transported will not suffice to maintain the canal in proper order, and it will then be possible for the New Zealander of Macaulay to sketch the ruins of aqueducts from the summits of disused locks. In the face of fruitless efforts to avert the result, and after long discussion of its future management, the canal will be forever abandoned." *

Events did not justify this prediction. The years from 1876 to 1880 proved an upward period in the figures of canal traffic, which reached 6,457,656 tons in the latter years. Three of the branch canals had been discontinued in 1877, and the traffic for 1880 was in fact larger than the aggregate for the same canals in any former year. The Erie Canal in 1880 carried 4,608,651 tons,—over 20 per cent. more than in any previous year, the increase being for the most part in the grain traffic. This year, however, proved exceptional; and in the following year the Erie Canal traffic was about a million tons less than in 1880. In 1882 the total canal traffic, while well above that for the minimum year 1876, was about 16 per cent. below the maximum figure for 1872. This decrease was, however, altogether in the smaller canals, the Erie and Champlain showing practically the same figures as ten years before. But during the same decade railroad traffic had doubled, and the railroad proportion of grain receipts at New York had risen to 63 per cent.

In 1882 the canal tolls were abolished; and the canals became free waterways, maintained by the State from general taxation. This change did not produce any marked effects on the traffic, which, with slight variations, remained at about the figures of 1882 until the end of the decade. Railroad traffic, meanwhile, continued to increase,

* John G. Stevens, in *Scribner's Magazine*, xv. p. 124.

though at a smaller rate than theretofore. By 1890 the canal traffic was but 12 per cent. of the entire freight movement across New York State; and the proportion of grain arriving at New York City by canal was but 32 per cent. of the total receipts, and in that year for the first time was less than half of the total receipts during the season of navigation.

Since 1890 the canal traffic has again declined positively as well as relatively, the mimimum years of 1895 and 1898 being followed by small gains in 1896 and 1899. The tonnage for 1898 was 3,360,000 tons, and for 1899 3,689,000 tons; while the aggregate freight tonnage on the principal New York railroads has increased to 67,000,000 tons. This recent decline has affected all of the canals now in use, though the Champlain Canal had shown a much smaller decrease than the others. The west-bound traffic, too, has almost held its own; and the largest falling off has been in the through grain traffic, which in 1899 was only about half of that in 1890. The canal proportion of New York grain receipts has fallen to 12 per cent., and of the receipts during the season of navigation to 16 per cent.

Viewing the whole period from 1868 to 1899, the total canal traffic has declined from 6,442,000 tons to 3,689,000 tons, the decline being mainly in forest and agricultural products, coal and ores, which show less than half the volume moved thirty years ago. Of the particular canals the decrease in traffic has been most marked on the branch canals discontinued in 1877, and on the Oswego Canal, where the traffic has fallen from 940,000 tons in 1868 to 50,000 tons. The Champlain Canal has maintained its traffic to a larger degree than the others, having a tonnage of 800,000 at present as compared with 1,120,000 tons in 1868. The Erie Canal now carries about 2,500,000 tons as against 3,846,000 tons in 1868.

While the actual decrease in tonnage on the Erie and

Champlain Canals is well marked and deserving of notice, the existing traffic is still of considerable volume, and these canals are yet far from having reached a condition of disuse. But when the canal traffic is compared with the railroad traffic, the decline of the latter in comparative importance is unmistakable. While as late as 1869 the canal traffic, measured in ton-miles, was equal to the aggregate railroad traffic across New York State, at present the canal traffic is but 5 per cent. of the railroad traffic, and is less than one-sixth of the traffic on either the New York Central or the Erie Railroads.

Of the through traffic the canals have continued to secure a larger share of the business. From 1880 to 1890, while the total tonnage of the New York Central Railroad was from two to three times the canal tonnage, the through tonnage on the canals was from 50 to 80 per cent. larger than on the railroad. But even here the railroads have now become the most important means of transportation. In 1892 the through freight tonnage on the New York Central was for the first time larger than the canal through tonnage; and since 1895 the railroad had steadily increased both its volume and proportion of through traffic, carrying during the last two years more than twice as many tons of through freight as the canals.

II.

The forces which have produced the decline in canal transportation which has been noted are, as usual in economic history, many and complex; and the different factors have been of widely varying importance.

In respect to lumber and other products of the forest the decreased canal tonnage is due, in a measure, to the smaller amount of traffic across New York State. The New York forests have long since been denuded; and in recent years the Michigan supply has fallen off, and with

it the lake lumber business. The lumber receipts by lake at Tonawanda — which represent the bulk of the lumber traffic to be moved across New York — were in 1898 but two-thirds of the receipts in 1890. With a smaller traffic to be moved, a decline in canal movement was inevitable.

So, too, in regard to iron ore, the decline in canal traffic has been caused by the smaller output of the Lake Champlain mines since the development of the vast deposits along Lake Superior. The output from these latter fields has been smelted near the bituminous coal fields, and the increasing traffic in both ores and iron products has been thus far beyond the field of direct canal competition.

The decline in coal traffic is due in part to two other causes: (1) the construction of railroads from the mines in eastern Pennsylvania to Lake Erie, which provided a shorter and more direct route than that *via* the Hudson River and the canals, and without transfer *en route;* and (2) the extensive use of bituminous coal, which is mined in regions not directly accessible for canal movement either east or west. The development of coal traffic has been one of the most important items in the expansion of railroad traffic; and the geographical situation of the mines and markets explains why the canals, in their present condition, have not shared in this development.

Another considerable part of the railroad freight traffic to-day is the movement of live stock and fresh meats; and for this business the canals have never been a competitor, on account of the necessity for rapid movement, by furnishing which the railroad has made the traffic possible. For highly manufactured goods and expensive merchandise, freight rates are so small a proportion of their value that terminal accommodations and speed in delivery are often considered of more importance than cheaper rates; and the railroads have hitherto provided better facilities in these directions than the canal lines.

So far as the causes thus far indicated account for the

development of railroad traffic and the decline of canal traffic, the outcome would seem to be the result of natural forces. And it must be admitted, too, that these explanations account in some measure for the predominance of the railroad over the canal as a means of transportation for freight. They do not, however, give a complete explanation of the existing situation, either in respect to the expansion of railroad traffic or the decline in canal traffic.

The additional factors, although they have affected in no little degree the movement of commodities already mentioned, can best be noted in connection with the grain traffic. We have already seen, in following the traffic history of the past three decades, the decline in the canal tonnage of grain, both in actual amount and, more especially, in the percentage of the total receipts at New York. The increase in the total receipts at New York is sufficient to show that in this case the explanations of a decline in traffic or of geographical changes in sources of production are not adequate. The same point is emphasized by noting the rapid increase in the grain receipts by lake at Buffalo. In 1869 these receipts were 37,000,000 bushels, of which 28,600,000 bushels, or 77 per cent., were forwarded by canal. In 1898 the lake receipts of grain at Buffalo had risen to 215,000,000 bushels, of which less than 11 per cent. went forward by canals. The canal shipments were, in fact, less by 5,000,000 bushels than in 1869, and less than a third of the canal shipments in 1880, the decline in canal shipments being most marked after 1890. As practically all of the lake receipts of grain at Buffalo are forwarded to the Atlantic coast, and as all must be transferred at Buffalo, whether forwarded by rail or canal, it is evident that the declining canal tonnage of grain — in the face of a steadily increasing traffic between its terminal points — is due directly to the competition of the railroads, which in this case have no geographical advantages.

The immediate explanation of this diversion of traffic from the canal to the railroads is the reduction in rail rates and the better facilities by which the railroads offset the difference in rates remaining in favor of the canals. It has therefore been argued that this situation proves the essential and permanent superiority of railroads over canals for any and all classes of traffic, and that the day of usefulness of even the Erie Canal has passed. The question, however, requires further study as to the causes of the reduced rates and the better transportation facilities by railroad, to learn whether these are due entirely to causes peculiar to railroads or to methods which may be applied also to canal transportation.

Such an investigation shows that, while the railroads during the past thirty years have made constant and large improvements both in their physical condition and in their methods of administration, the canals have in both respects remained practically at a standstill. In this period the road-beds of the railroads have been entirely rebuilt with heavy steel rails, stone ballast, and steel bridges, in place of the strap rails, sand ballast, and wooden bridges first used; and, with the more solid and durable road-bed, it has been possible to use larger and heavier cars and more powerful locomotives. Thirty years ago freight cars of ten tons were the largest made, and a train-load of two hundred tons was rare. To-day the freight cars used on the trunk roads carry at least thirty tons, and fifty-ton steel cars have been constructed. Train-loads of one thousand tons are common; and, with locomotives and road-bed improvements now under way, it is expected on some roads to move trains of two thousand tons of paying freight. The extent of such improvements is indicated by the expenditure for these purposes. On the New York Central and Hudson River Railroad alone the cost of road and equipment has been increased since 1870 from $60,000,000 to $165,000,000, an increase of over $100,000,000,

or nearly twice the total expenditure for such purposes before 1870. The other roads across New York State have expended correspondingly large sums for new construction and for reconstruction of road-bed and rolling stock.

On the other hand, no permanent enlargements and new improvements have been carried through on the canals for nearly forty years; while in many respects the canals are practically the same to-day as when DeWitt Clinton last beheld them. The same style of lock gates are employed, but they are more unwieldy because more ponderous. The same system of animal towage still prevails, but the boats move more slowly because they are larger and more deeply submerged. The dimensions of the prism and locks, which limit the largest boats possible on the canals, remain as they were in 1862. The only changes in the physical condition of the canals since that time have been the completion of some parts of the former enlargement not finished in 1862, and the lengthening of one chamber of about two-thirds of the locks so as to admit two boats at one time. This last change has encouraged the system of moving boats in trains of two in place of singly,—practically the sole change in transportation methods on the canals as compared with the increase in railroad train-loads from two hundred to two thousand tons.

Of equal importance has been the great improvement in the business management of the railroads, while on the canals the business management has remained as stationary as the physical condition of the prism and structures. The consolidation of small railroad companies into through trunk lines has reduced general expenses, and the large corporations have many advantages in securing capital and in studying the problems of operation so as to make use of the most economical methods both in transportation and terminal facilities.

These factors have aided directly in the reduction of rail rates. In addition, the large railroad companies offer other advantages which often offset a considerable difference in rates. Their through bills of lading relieve the shipper of all responsibility and guarantee the safe delivery of goods at final destination; while their well-organized system of soliciting freight and their ability to make long-time contracts make it possible to secure business in the face of lower but less certain rates.

In marked contrast with the railroad organizations the traffic on the canals continues to be handled by single boatmen or small companies owning each a few boats, with too little capital to make use of labor-saving devices or to control their own terminal facilities, with no organized system for soliciting traffic, unable to make long-time contracts, and without such responsible standing in the community as to encourage large shippers to patronize their lines. The absence of large transportation lines on the canals has been due in part to the lack of physical improvement, which inevitably has discouraged active business managers from exploiting a field where the possibilities of business were so narrowly limited by the neglect of the State. In 1896 there was added to this a statutory provision restricting canal transportation to corporations with not over $50,000 capital; and, so long as this limitation remains in force, the development of transportation business on the canals must be seriously hampered.

From these considerations it is evident that the existing situation of canal and railroad traffic in New York State demonstrates merely that the canals and business methods of 1860 cannot actively compete with the railroads and business methods of 1900. And it is at least worth while to investigate further the possibilities of applying to the canals the same process of improvement in physical condition and business management which has been so successful in the case of the railroads.

III.

The influence of the canals, even in their present condition, on railroad freight rates is deserving of consideration. The average rates of freight per ton-mile on the trunk railroads of the United States have declined during the last thirty years from about 2 cents (specie value) to about 6 mills on most of the standard routes, but on the Lake Shore & Michigan Southern Railroad to 5 mills, and on the Chesapeake & Ohio Railroad to 3.6 mills. The low average on the last-named road is due to the fact that most of its freight traffic is in long hauls of coal; and there is very little local or high-grade traffic, as on other roads. The average rates on the New York canals have declined in the same period from 6.5 mills to 2 mills, the present average being about one-half the average rate by the lowest railroad, and about one-third of the average rate on most trunk roads.

On certain classes of commodities, however, the railroad rates are much closer to the canal rates. These are low-grade articles, which on the one hand are either unable to pay high rates of freight or are subject to special competition, and on the other hand are shipped in large quantities, and so capable of being moved in heavy train-loads and transferred at terminals by mechanical appliances which reduce the cost of handling.* Thus the coal traffic on the Chesapeake & Ohio Railroad is moved at an average rate of 3.3 mills per ton-mile, and the coal shipments to the seaboard at an average of 2.21

* The writer would take exception to the statement sometimes made that railroads can afford to carry low-grade freights at a rate that will pay anything over "operating" expenses. Even value of service rates must, in the long run, pay *all* the special expenses incurred for the special traffic; and these include, in addition to the operating expenses, the expenditures for special terminals and rolling stock (cars and locomotives) used for this traffic, and some proportion of the expenditure for construction and maintenance of way, due to the more substantial road-bed necessitated by the larger traffic and heavier train-loads.

mills, which closely approaches canal rates. This last is an exceptional rate, however, even for coal. The lowest average rate for coal on the Lehigh Valley Railroad has been 6.5 mills, and on the Erie Railroad 5.37 mills per ton-mile. Iron ore on the new railroad from Conneaut to Pittsburg is moved in 1,500 ton train-loads at an average rate (during 1899) of 3.65 mills per ton-mile.

On grain, the commodity for which the railroads come in most direct competition with the canal, the railroad rates have been reduced almost to the rates on the present canal. The rail rate on wheat from Buffalo to New York in 1898 and the summer of 1899 was 3.5 cents per bushel, and the canal rate 2.8 cents,— equal to 2.5 mills per ton-mile on the railroad and 1.9 mills per ton-mile on the canal. It is significant that these low railroad rates on grain — so much less even than rates on other bulk commodities of less value — are given only on the trunk lines to the seaboard with which the canal route is a direct competitor, while in the country west of Chicago grain rates are much higher. There can be little doubt that a most important factor in securing these rates is the presence of the canal, which remains, even while the railroads carry most of the business, at least a potential competitor for the traffic, always available if the railroads attempt to raise rates much above profitable canal rates.

The rail rates on high-class goods also illustrate the effects of canal competition. At present the railroads carry most of this traffic in the face of much lower canal rates, on account of their better facilities for handling and delivering package goods,— a situation due, in considerable degree, to the advantages of large companies in securing suitable terminal facilities in New York. Nevertheless, the potential competition of the canals affects rates even on this traffic. The rates on high-grade freight from New York to competitive railroad points in Pennsylvania are from 10 to 35 per cent. higher than to points on the

canals at a corresponding distance from New York. Buffalo and Pittsburg are at almost equal distances from New York; yet the rates to Buffalo on sixth-class goods are 13 cents per hundred pounds, to Pittsburg 15 cents per hundred pounds. On first-class goods, rates to Buffalo are 39 cents, to Pittsburg 45 cents, per hundred pounds. Similar differences exist in the rates to Albany, Utica, Rome, Syracuse, Rochester, and intermediate points, as compared with those to Reading, Wilkesbarre, Harrisburg, Altoona, and way points distant from the water route across New York State.

Thus, even under present conditions, the canals seem to have been effective agents in reducing railroad rates, and as such have been far more important factors in transportation than is indicated by the aggregate or relative movement of freight over them; and it is not an unreasonable claim to make that merely as a regulating force on railroad rates the canals as they exist have a value to New York State much beyond their cost of maintenance.

It nevertheless remains true that the canal traffic depends not on railroad rates for high-class freight, but on the rates for bulk commodities. We have already noted that on grain the New York railroads have almost met the canal rates; while, with locomotives now building, it is expected to move heavier trains, and so make possible further reductions. On the other hand, the cost of materials and labor in the future will be higher than for several years past. Considering all of these points, it is probable that the New York railroads will before long be able to move grain at 2 mills per ton-mile (3 cents per bushel from Buffalo to New York), and possibly for slightly less than this figure; and, unless a materially lower rate can be made on the canals, the latter may be expected to lose most of what grain traffic they still retain.

IV.

The loss of traffic by the canals and the development of railroad traffic is in itself a significant economic change. The movement has, however, larger interests on account of its effects on general economic conditions, and more particularly on the development of New York as a commercial centre.

So far as the world aspects of the case are concerned, the problem is to secure the most efficient and least expensive labor-saving device for transportation. If an improved canal will provide a less expensive route for a large part of the heavy traffic movement across New York State than the existing railroads, or can develop a traffic not possible at present, then it is an economic disadvantage to confine transportation to the present methods. The economic gain to the world would be real, whether in its distribution the immediate advantage from the cheaper rate should be secured most largely by the Western producer, the New York middleman, or the consumer in Europe or the Eastern States. On the other hand, if an improved canal will not provide a less expensive transportation route, it would be an economic loss to undertake the improvement.

The city and State of New York have, however, a more direct and vital interest in the problem. So long as the Erie Canal remained the main transportation route between the lakes and the seaboard, practically the entire traffic between the lake region and the Atlantic States and Europe passed through New York. But, when the railroads carry the larger part of the traffic, New York has no longer this special advantage. The other Atlantic and even Gulf ports are as accessible by rail, and from many points more accessible, than is New York; and, with railroad transportation predominant, the commercial pre-eminence of New York is to some extent affected.

Thus far the effects of declining canal traffic have been most evident in the exports of breadstuffs from New York. There has been no positive decline in this commerce; but in the face of a vast increase in the production of breadstuffs in regions directly tributary to New York (Minnesota and the Dakotas) its percentage of the exports of breadstuffs has steadily diminished during the last twenty-five years, as indicated in the following table: —

NEW YORK'S PERCENTAGE OF EXPORTS FROM THE SIX PRINCIPAL UNITED STATES PORTS.

	Flour.	*Wheat.*	*Corn.*
1873–1882	70.42	63.35	47.70
1883–1892	46.06	60.22	46.57
1893–1896	43.99	56.13	32.55
1897	44.32	43.83	23.72
1898	37.61	55.49	26.14
1899 (January 1 to October 31)	34.58	50.10	26.71

While most evident in the case of exported breadstuffs, the diversion of trade from New York to other ports has been sufficient to affect seriously the total volume of foreign trade, as indicated by the value of exported merchandise and the tonnage of vessels in the foreign trade. From 1886 to 1898, New York's percentage of the total exports from the United States declined from 46.5 per cent. to 36.1 per cent. During the seventies and early eighties, the tonnage of vessels in the foreign trade entering at New York was from 60 to 70 per cent. greater than the aggregate of such entries at the principal other ports (Boston, Philadelphia, Baltimore, New Orleans, and Montreal); but during the present decade the New York tonnage has increased but slowly, while the tonnage entering at other ports has continued to increase rapidly, until in 1898 the aggregate for the five ports named exceeded that at New York. In the direct trade to Liverpool, Boston alone now surpasses New York.

For the coming summer another serious diversion of

grain export trade from New York is almost inevitable. The Canadian government has just completed the last link in the series of canals around the rapids of the St. Lawrence River, which, with the Welland Canal, provide a fourteen foot waterway from the upper lakes to deep water at Montreal. A syndicate of Buffalo capitalists has made an agreement with the Montreal authorities for the erection of elevators at Montreal and the construction of vessels to carry grain by this route, guaranteeing to bring 25,000,000 bushels during the coming season and 35,000,000 bushels during each of the two succeeding years. This is equal to one-fifth of the total receipts of grain at New York, and more than one-fourth of the grain exports from New York. With the predicted freight rate by this Montreal route (4 cents a bushel from Chicago, equal to 1 mill per ton-mile) so much lower than existing or possible rail rates, there seems little doubt that a still larger proportion will before long be transferred from New York to Montreal, unless it is possible to provide an equally cheap water route across the State of New York.

V.

In 1895 the legislature and people of New York State authorized the issue of nine million dollars in State bonds, to be expended in the improvement of the Erie, Champlain, and Oswego Canals, by deepening them two feet, with the object of increasing the cargo capacity of canal boats to the extent allowed by the greater draft of water. By the summer of 1898 the $9,000,000 had been practically expended, but with the work far from completed. An investigating commission appointed by Governor Black reported that about 36 per cent. of the improvement aimed at had been accomplished, 64 per cent. remained to be done, and that, while about a million dollars had been misspent, the total amount of nine millions was far from

sufficient to perform the task, and that fifteen millions additional would be necessary to carry to completion the work begun.

The political and administrative questions raised by this report do not directly affect the economic problems here under discussion. The work of improvement was necessarily discontinued, and it was soon suggested that what had been undertaken was not adequate to the situation. Governor Roosevelt, who entered office January 1, 1899, decided that before any further action was advisable there was need for a careful preliminary examination of the commercial advantages and the cost of various schemes for improvement, in order to determine what was the proper course to pursue. For this purpose he selected a committee, composed of prominent business men and practical engineers, who were requested to undertake the investigation, and to "formulate definitely the canal policy of the State."

This committee, composed of Francis V. Greene, (chairman), George E. Green, John N. Scatcherd, Major Thomas W. Symons, U.S.A., and Frank S. Witherbee, with the State engineer and surveyor, Edward A. Bond, and the superintendent of public works, John N. Partridge, has devoted almost a year to studying the economic and engineering problems; and its report has just been submitted to the governor and by him transmitted to the legislature.

The report emphatically opposes the abandonment of the canals, and takes the ground that, with adequate improvement, they can again become active factors in transportation and promoters of the commercial and industrial interests of New York State.

Of the various projects for improvement, that for a ship canal on the main trunk route is dismissed as a subject for proper consideration by the federal government. In fact, Congress has previously authorized surveys for such

a canal, which have been prosecuted for the last three years, are now almost completed, and will probably be presented to the present session of Congress. The New York committee, however, consider a ship canal of doubtful expediency at any probable cost. The large vessels built for the heavy weather and storms on the ocean and lakes are so expensive, both in construction and in operation, that a considerable rate of speed is essential to economy. That speed could not be obtained in a canal of any practicable dimensions; and the expensive equipment and navigating force would be a useless source of expense in the canals, which, in so long a stretch of artificial waterway, would add very materially to the rates of freight possible by such vessels on the open sea.

This conclusion was confirmed by the detailed study of projects for enlarging the Erie Canal, which demonstrated that on an adequate barge canal the cost of transportation could be brought nearly to the cost on the lakes, the cheaper construction and operating expenses needed for vessels used only on the inland route offsetting the advantages of large vessels. The investigations of the committee have included both the cost of transportation* under each of a number of projected improvements, and also the cost for executing each project. It was necessary, on the one hand, to ascertain probable freight rates, so as to determine whether a given project would be likely to develop traffic, and, on the other hand, to learn the cost, so as to judge whether the outlay would be within the limits of the direct benefits.

These investigations convinced the committee that for the Erie Canal the improvement begun in 1895 was not

*These estimates, made by Major Symons after consultation with boat-builders and canal boatmen, include interest, depreciation, and all operating expenses. They are based on boats moving in fleets or trains of four, one in each fleet being a steamer and providing the motive power. Full cargoes are estimated for the east-bound trip, and one-third cargoes on the return trip, with large allowances for detentions at the terminal points.

adequate to the situation at the present time. That project, when complete, would permit the use of boats of 320 tons capacity, or one-third larger than the boats now in use. The cost of transportation by such boats is estimated at one-third less than the cost on the present canal,—too slight an improvement to have permanent value, and yet requiring the further expenditure of thirteen million dollars to complete the work.

The committee presents, as the smallest project worthy of consideration for the Erie Canal, the largest possible extension of the improvement begun in 1895, adopting the depth of nine feet provided in that plan, but lengthening and deepening locks, and flattening curves, so as to provide for boats of 450 tons capacity. This, however, is not considered as a final and permanent work. For such the committee strongly recommends the adoption of a radically new plan, providing for the enlargement of the canal to accommodate barges of 1,000 tons capacity and ten feet draft, with locks capable of passing two boats at once. The route for either of these projects, selected after engineering investigations of several alternative routes, departs from the present line of the Erie Canal for about one-third of the distance, utilizing the Seneca and Oneida Rivers, Oneida Lake, and the Mohawk River. The present route was the best for the original canal, with its small dimensions and the necessity for a tow-path; but, for the large boats propelled by mechanical power, now contemplated, not only do the natural watercourses provide a better waterway for navigation, but the construction of the canal by this route is the more economical. Moreover the new route takes the canal out of the business section of Syracuse, and the larger project also goes around Rochester, avoiding the present difficulties both to navigation and city traffic.

The cost of these projects is estimated after careful engineering investigations at $21,160,000 for the smaller

and $59,000,000 for the larger. Under the smaller project the cost of transportation is estimated at 44 cents per ton, or 1⅛ cents per bushel, of wheat from Buffalo to New York; under the larger project, 26 cents per ton, or .8 of a cent per bushel, of wheat. The ton-mile cost would in one case be .88 of a mill, in the other case .52 of a mill.

The capacity of the canal as enlarged under the smaller project would be 10,000,000 tons a year; and on that tonnage of through freight the saving in cost of transportation as compared with the present canal would be $4,300,000 per annum. The capacity of the larger canal would be over 20,000,000 tons a year; and on that tonnage the saving in cost of transportation as compared with the present canal would be $12,200,000 per annum. Comparing these figures with the estimates for cost of construction, it is seen that either improvement, even if less than half of the maximum tonnage is secured, will make possible a direct reduction in cost of transportation much more than the outlay for the improvement; while, in addition, New York State would gain indirect and immeasurable advantages by the development of its commercial and industrial activities.

Without attempting to measure accurately the tonnage likely to be secured, it is possible to indicate in a general way the possibilities of traffic. That the probable rates of freight on the improved canal will prevent further diversions of the export trade in breadstuffs from New York to other ports is almost self-evident; and this result of itself would warrant a large expenditure by the State. But the larger improvement certainly makes possible rates that will do much more,— will regain the trade already diverted, and re-establish the undisputed pre-eminence of New York in the export trade.

Perhaps of even greater importance are the possibilities in connection with the iron industry. The raw materials for the manufacture of iron and steel can be laid down at

Buffalo and vicinity as cheaply as at Pittsburg, the higher price for coal and coke at Buffalo being offset by the saving of the rail haul of ore from Lake Erie ports to Pittsburg. With an adequate waterway to the seaboard, manufactured iron and steel from Buffalo furnaces can be delivered in New York for one-fourth of the present cost of carriage from the furnaces to the seacoast,—a saving of $1.50 per ton. Opportunities are thus offered for promoting the industrial development of western New York; for making New York Harbor the distributing centre for iron and steel products to the markets in the immediate vicinity and in New England and to the rapidly increasing market in foreign countries; and for developing on the Hudson River a large shipbuilding industry. And it is not too much to say that the possibilities in these directions justify a comprehensive enlargement of the Erie Canal fully as much as the prospect of transporting breadstuffs justified its original construction.

Nor is it impossible that, with the low rates of freight by such an enlarged canal, it will be found cheaper to ship west-bound coal by the indirect canal route than by the more direct railroad routes; while a large east-bound traffic in bituminous coal to the New England manufacturing districts may also be developed. Still more, it is at least probable that, with a water route such as has been proposed, regular lines of steamers can be operated at as great a rate of speed as freight trains, and secure no inconsiderable amount of package freight business.

All of this assumes a thoroughly competent system of business management, both of the canals themselves and of the transportation lines; and the committee have insisted that no money should be spent for further enlargement unless the limitation on capital of canal navigation companies shall be repealed, the State employees on the canals organized on a basis of efficiency and permanent tenure, and the laws regulating contracts revised so as to

prevent any mismanagement in the execution of the improvements.

The minor canals do not offer such large opportunities for developing trade and industry as does the Erie Canal, and no radical enlargement of these has been proposed. For the Oswego and Champlain Canals the completion of the improvement of 1895 is recommended, at an estimated cost of $2,640,000. The completion of this project will make the Oswego Canal suitable for boats of 320 tons capacity, and the Champlain Canal suitable for boats of 240 tons capacity. For the Black River and the Cayuga and Seneca Canals no improvement is recommended.

VI.

The financial aspects of the New York canals have been the subject of frequent discussion, and a clear understanding of the matter is desirable.

Down to 1882 the canals of New York were operated strictly as a business undertaking, tolls being collected on all boats to meet the expenses of construction and maintenance. After the completion of the Erie Canal in 1825 the revenues from tolls were at once sufficient to meet all expenditures for maintenance and for interest and sinking fund on the debt incurred for the original construction. With the increase in traffic the revenues produced a surplus, and in 1841 and thereafter a considerable sum was annually paid from the canal revenues to the general fund of the State treasury. The records show that, without any cessation of these payments, after 1844 counter-payments were made from the general fund to the canal fund, and for thirty years these payments and counter-payments continued to be made. In 1875 the payments from the canal revenues to the general fund ceased; but the payments on the other side continued, and since 1882 all the expendi-

tures for the canals have been met from the proceeds of the general State taxes.

A thoroughly accurate balancing of the accounts with the canals would require the careful calculation of interest on all payments in both directions. In 1876 the auditor of the canal department prepared a statement of the revenues and expenditures on each and all the canals down to 1874, charging and crediting interest at the rate of 6 per cent. per annum, not compounded. This statement shows that the minor canals were a distinct financial burden to the State, the expenditures for maintenance on several of them being from three to four times the total revenue. Excluding interest, the loss on these canals was $23,000,000. Including interest, the loss was $50,000,000. Most of these canals were abandoned in 1877, their construction having clearly proved to be a mistake.

The revenues from tolls on the Oswego, the Champlain, and the Cayuga and Seneca Canals more than paid all expenses for maintenance and operation, leaving a surplus sufficient to pay a small dividend on the cost of construction.

As to the Erie Canal, the financial balance was steadily and largely in favor of the canal. The account, including interest, down to 1874, showed a surplus of revenues over operating expenses of $196,000,000, and a surplus of revenues over all expenses for operation and construction of $63,000,000. Excluding interest, the latter surplus was $38,000,000. In 1882 a similar balance, excluding interest, showed that the surplus had risen to $42,000,000 over all sums paid out on it for any purpose. Even including all the expenditures since 1882, against which there has been no direct revenue, the surplus, excluding interest, on the Erie Canal is almost $20,000,000. If interest were included, this figure would be largely increased.

The cost of the proposed enlargement naturally suggests comparisons with former expenditure. The original construction of the Erie and Champlain Canals cost $9,000,000, a sum equal to 3 per cent. of the assessed valuation of the State at the time the work was undertaken. By 1845 the total expenditure for canal construction and enlargement was $30,000,000, equal to 5 per cent. of the assessed valuation at that time. When the enlargement of the Erie Canal was completed in 1862, the total cost of construction and enlargement was $56,000,000, equal to 4 per cent. of the valuation of 1860. The State canal debt in 1860 was $27,000,000, the largest amount outstanding at one time; but in the decade 1840–50 the debt was much larger in proportion to valuation, reaching the highest percentage, 3.8 per cent. in 1844.

The estimates for the improvements now recommended aggregate $62,000,000, which is 1.3 per cent. of the present valuation of the State. On 3 per cent. bonds, redeemable as required by the State constitution in eighteen years, the annual charge for interest and sinking fund would be $4,508,020, about 10 cents per $100 of present assessed valuation, which rate would decrease year by year as the valuation increases.

In the past, such outlay for canal construction, so far as it related to the Erie Canal, has been more than repaid, as we have seen, in tolls. Similar results could undoubtedly be produced by tolls on the traffic developing on the enlarged canal but for the existing constitutional prohibition of tolls. The committee have, however, recommended an important change in the apportionment of the cost of improvement, by assessing the entire amount on the canal counties. Such a method is based on the same principle as special assessments for local improvements. The canal counties contain 80 per cent. of the population of the State, and 90 per cent. of the total valuation of the State, so that the proposed change does

not involve any large increase in the charge on them, while it relieves the counties not on the canal route, which receive only indirect benefits from the canals.

The recommendations of the committee are now before the legislature and people of New York State. The projects presented are the result of careful and systematic study of all sides of the question. Their execution requires the enactment of a statute by the legislature and a vote of the people authorizing the necessary loans.

JOHN A. FAIRLIE.

THE PRECONCEPTIONS OF ECONOMIC SCIENCE.

III.

In what has already been said, it has appeared that the changes which have supervened in the preconceptions of the earlier economists constitute a somewhat orderly succession. The feature of chief interest in this development has been a gradual change in the received grounds of finality to which the successive generations of economists have brought their theoretical output, on which they have been content to rest their conclusions, and beyond which they have not been moved to push their analysis of events or their scrutiny of phenomena. There has been a fairly unbroken sequence of development in what may be called the canons of economic reality, or, to put it in other words, there has been a precession of the point of view from which facts have been handled and valued for the purpose of economic science.

The notion which has in its time prevailed so widely, that there is in the sequence of events a consistent trend which it is the office of the science to ascertain and turn to account,— this notion may be well founded or not. But that there is something of such a consistent trend in the sequence of the canons of knowledge under whose guidance the scientist works is not only a generalization from the past course of things, but lies in the nature of the case; for the canons of knowledge are of the nature of habits of thought, and habit does not break with the past, nor do the hereditary aptitudes that find expression in habit vary gratuitously with the mere lapse of time. What is true in this respect, for instance, in the domain of law and institutions is true, likewise, in the domain of

science. What men have learned to accept as good and definitive for the guidance of conduct and of human relations remains true and definitive and unimpeachable until the exigencies of a later, altered situation enforce a variation from the norms and canons of the past, and so give rise to a modification of the habits of thought that decide what is, for the time, right in human conduct. So in science the ancient ground of finality remains a good and valid test of scientific truth until the altered exigencies of later life enforce habits of thought that are not wholly in consonance with the received notions as to what constitutes the ultimate, self-legitimating term — the substantial reality — to which knowledge in any given case must penetrate.

This ultimate term or ground of knowledge is always of a metaphysical character. It is something in the way of a preconception, accepted uncritically, but applied in criticism and demonstration of all else with which the science is concerned. So soon as it comes to be criticised, it is in a way to be superseded by a new, more or less altered formulation; for criticism of it means that it is no longer fit to survive unaltered in the altered complex of habits of thought to which it is called upon to serve as fundamental principle. It is subject to natural selection and selective adaptation, as are other conventions. The underlying metaphysics of scientific research and purpose, therefore, changes gradually and, of course, incompletely, much as is the case with the metaphysics underlying the common law and the schedule of civil rights. As in the legal framework the now avowedly useless and meaningless preconceptions of status and caste and precedent are even yet at the most metamorphosed and obsolescent rather than overpassed,— witness the facts of inheritance, vested interests, the outlawry of debts through lapse of time, the competence of the State to coerce individuals into support of a given policy,— so in the science the liv-

ing generation has not seen an abrupt and traceless disappearance of the metaphysics that fixed the point of view of the early classical political economy. This is true even for those groups of economists who have most incontinently protested against the absurdity of the classical doctrines and methods. In Professor Marshall's words, "There has been no real breach of continuity in the development of the science."

But, while there has been no breach, there has none the less been change,— more far-reaching change than some of us are glad to recognize; for who would not be glad to read his own modern views into the convincing words of the great masters?

Seen through modern eyes and without effort to turn past gains to modern account, the metaphysical or preconceptional furniture of political economy as it stood about the middle of this century may come to look quite curious. The two main canons of truth on which the science proceeded, and with which the inquiry is here concerned, were: (*a*) a hedonistic-associational psychology, and (*b*) an uncritical conviction that there is a meliorative trend in the course of events, apart from the conscious ends of the individual members of the community. This axiom of a meliorative developmental trend fell into shape as a belief in an organic or quasi-organic (physiological)* life process on the part of the economic community or of the nation; and this belief carried with it something of a constraining sense of self-realizing cycles of growth, maturity and decay in the life history of nations or communities.

Neglecting what may for the immediate purpose be negligible in this outline of fundamental tenets, it will bear the following construction. (*a*) On the ground of the hedonistic or associational psychology, all spiritual continuity and any consequent teleological trend is tacitly denied so far as regards individual conduct, where the

*So, *e.g.*, Roscher, Comte, the early socialists, J. S. Mill, and later Spencer, Schaeffle, Wagner.

later psychology, and the sciences which build on this later psychology, insist upon and find such a teleological trend at every turn. (*b*) Such a spiritual or quasi-spiritual continuity and teleological trend is uncritically affirmed as regards the non-human sequence or the sequence of events in the affairs of collective life, where the modern sciences diligently assert that nothing of the kind is discernible, or that, if it is discernible, its recognition is beside the point, so far as concerns the purposes of the science.

This position, here outlined with as little qualification as may be admissible, embodies the general metaphysical ground of that classical political economy that affords the point of departure for Mill and Cairnes, and also for Jevons. And what is to be said of Mill and Cairnes in this connection will apply to the later course of the science, though with a gradually lessening force.

By the middle of the century the psychological premises of the science are no longer so neat and succinct as they were in the days of Bentham and James Mill. At J. S. Mill's hands, for instance, the naïvely quantitative hedonism of Bentham is being supplanted by a sophisticated hedonism, which makes much of an assumed qualitative divergence between the different kinds of pleasures that afford the motives of conduct. This revision of hedonistic dogma, of course, means a departure from the strict hedonistic ground. Correlated with this advance more closely in the substance of the change than in the assignable dates, is a concomitant improvement — at least, set forth as an improvement — upon the received associational psychology, whereby "similarity" is brought in to supplement "contiguity" as a ground of connection between ideas. This change is well shown in the work of J. S. Mill and Bain. In spite of all the ingenuity spent in maintaining the associational legitimacy of this new article of theory, it remains a patent innovation and a departure from the

ancient standpoint. As is true of the improved hedonism, so it is true of the new theory of association that it is no longer able to construe the process which it discusses as a purely mechanical process, a concatenation of items simply. Similarity of impressions implies a comparison of impressions by the mind in which the association takes place, and thereby it implies some degree of constructive work on the part of the perceiving subject. The perceiver is thereby construed to be an agent engaged in the work of perception; therefore, he must be possessed of a point of view and an end dominating the perceptive process. To perceive the similarity, he must be guided by an interest in the outcome, and must "attend." The like applies to the introduction of qualitative distinctions into the hedonistic theory of conduct. Apperception in the one case and discretion in the other cease to be the mere registration of a simple and personally uncolored sequence of permutations enforced by the factors of the external world. There is implied a spiritual — that is to say, active — "teleological" continuity of process on the part of the perceiving or of the discretionary agent, as the case may be.

It is on the ground of their departure from the stricter hedonistic premises that Mill and, after him, Cairnes are able, for instance, to offer their improvement upon the earlier doctrine of cost of production as determining value. Since it is conceived that the motives which guide men in their choice of employments and of domicile differ from man to man and from class to class, not only in degree, but in kind, and since varying antecedents, of heredity and of habit, variously influence men in their choice of a manner of life, therefore the mere quantitative pecuniary stimulus cannot be depended on to decide the outcome without recourse. There are determinable variations in the alacrity with which different classes or communities respond to the pecuniary stimulus; and in so far as this condition prevails, the classes or communities in

question are non-competing. Between such non-competing groups the norm that determines values is not the unmitigated norm of cost of production taken absolutely, but only taken relatively. The formula of cost of production is therefore modified into a formula of reciprocal demand. This revision of the cost-of-production doctrine is extended only sparingly, and the emphasis is thrown on the pecuniary circumstances on which depend the formation and maintenance of non-competing groups. Consistency with the earlier teaching is carefully maintained, so far as may be; but extra-pecuniary factors are, after all, even if reluctantly, admitted into the body of the theory. So also, since there are higher and lower motives, higher and lower pleasures,— as well as motives differing in degree,— it follows that an unguided response even to the mere quantitative pecuniary stimuli may take different directions, and so may result in activities of widely differing outcome. Since activities set up in this way through appeal to higher and lower motives are no longer conceived to represent simply a mechanically adequate effect of the stimuli, working under the control of natural laws that tend to one beneficent consummation, therefore the outcome of activity set up even by the normal pecuniary stimuli may take a form that may or may not be serviceable to the community. Hence *laissez-faire* ceases to be a sure remedy for the ills of society. Human interests are still conceived normally to be at one; but the detail of individual conduct need not, therefore, necessarily serve these generic human interests.* Therefore, other inducements than the unmitigated impact of pecuniary

* "Let us not confound the statement that *human* interests are at one with the statement that *class* interests are at one. The latter I believe to be as false as the former is true. . . . But accepting the major premises of the syllogism, that the interests of human beings are fundamentally the same, how as to the minor? — how as to the assumption that people know their interests in the sense in which they are identical with the interests of others, and that they spontaneously follow them *in this sense?*" Cairnes, *Essays in Political Economy* (London, 1873), p. 245. This question cannot consistently be asked by an adherent of the stricter hedonism.

exigencies may be necessary to bring about a coincidence of class or individual endeavor with the interests of the community. It becomes incumbent on the advocate of *laissez-faire* to "prove his minor premise." It is no longer self-evident that: "Interests left to themselves tend to harmonious combinations, and to the progressive preponderance of the general good."*

The natural-rights preconception begins to fall away as soon as the hedonistic mechanics have been seriously tampered with. Fact and right cease to coincide, because the individual in whom the rights are conceived to inhere has come to be something more than the field of intersection of natural forces that work out in human conduct. The mechanics of natural liberty — that assumed constitution of things by force of which the free hedonistic play of the laws of nature across the open field of individual choice is sure to reach the right outcome — is the hedonistic psychology; and the passing of the doctrine of natural rights and natural liberty, whether as a premise or as a dogma, therefore coincides with the passing of that mechanics of conduct on the validity of which the theoretical acceptance of the dogma depends. It is, therefore, something more than a coincidence that the half-century which has seen the disintegration of the hedonistic faith and of the associational psychology has also seen the dissipation, in scientific speculations, of the concomitant faith in natural rights and in that benign order of nature of which the natural-rights dogma is a corollary.

It is, of course, not hereby intended to say that the later psychological views and premises imply a less close dependence of conduct on environment than do the earlier ones. Indeed, the reverse may well be held to be true. The pervading characteristic of later thinking is the constant recourse to a detailed analysis of phenomena in causal terms. The modern catchword, in the present con-

* Bastiat, quoted by Cairnes, *Essays*, p. 319.

nection, is "response to stimulus"; but the manner in which this response is conceived has changed. The fact, and ultimately the amplitude, at least in great part, of the reaction to stimulus, is conditioned by the forces in impact; but the constitution of the organism, as well as its attitude at the moment of impact, in great part decides what will serve as a stimulus, as well as what the manner and direction of the response will be.

The later psychology is biological, as contrasted with the metaphysical psychology of hedonism. It does not conceive the organism as a causal hiatus. The causal sequence in the "reflex arc" is, no doubt, continuous; but the continuity is not, as formerly, conceived in terms of spiritual substance transmitting a shock: it is conceived in terms of the life activity of the organism. Human conduct, taken as the reaction of such an organism under stimulus, may be stated in terms of tropism, involving, of course, a very close-knit causal sequence between the impact and the response, but at the same time imputing to the organism a habit of life and a self-directing and selective attention in meeting the complex of forces that make up its environment. The selective play of this tropismatic complex that constitutes the organism's habit of life under the impact of the forces of the environment counts as discretion.

So far, therefore, as it is to be placed in contrast with the hedonistic phase of the older psychological doctrines, the characteristic feature of the newer conception is the recognition of a selectively self-directing life process in the agent. While hedonism seeks the causal determinant of conduct in the (probable) outcome of action, the later conception seeks this determinant in the complex of propensities that constitutes man a functioning agent, that is to say, a personality. Instead of pleasure ultimately determining what human conduct shall be, the tropismatic propensities that eventuate in conduct ultimately determine

what shall be pleasurable. For the purpose in hand, the consequence of the transition to the altered conception of human nature and its relation to the environment is that the newer view formulates conduct in terms of personality, whereas the earlier view was content to formulate it in terms of its provocation and its by-product. Therefore, for the sake of brevity, the older preconceptions of the science are here spoken of as construing human nature in inert terms, as contrasted with the newer, which construes it in terms of functioning.

It has already appeared above that the second great article of the metaphysics of classical political economy — the belief in a meliorative trend or a benign order of nature — is closely connected with the hedonistic conception of human nature; but this connection is more intimate and organic than appears from what has been said above. The two are so related as to stand or fall together, for the latter is but the obverse of the former. The doctrine of a trend in events imputes purpose to the sequence of events; that is, it invests this sequence with a discretionary, teleological character, which asserts itself in a constraint over all the steps in the sequence by which the supposed objective point is reached. But discretion touching a given end must be single, and must alone cover all the acts by which the end is to be reached. Therefore, no discretion resides in the intermediate terms through which the end is worked out. Therefore, man being such an intermediate term, discretion cannot be imputed to him without violating the supposition. Therefore, given an indefeasible meliorative trend in events, man is but a mechanical intermediary in the sequence. It is as such a mechanical intermediate term that the stricter hedonism construes human nature.* Accordingly, when more of

* It may be remarked, by the way, that the use of the differential calculus and similar mathematical expedients in the discussion of marginal utility and the like, proceeds on this psychological ground, and that the theoretical results so arrived at are valid to the full extent only if this hedonistic psychology is accepted.

teleological activity came to be imputed to man, less was thereby allowed to the complex of events. Or it may be put in the converse form: when less of a teleological continuity came to be imputed to the course of events, more was thereby imputed to man's life process. The latter form of statement probably suggests the direction in which the causal relation runs, more nearly than the former. The change whereby the two metaphysical premises in question have lost their earlier force and symmetry, therefore, amounts to a (partial) shifting of the seat of putative personality from inanimate phenomena to man.

It may be mentioned in passing, as a detail lying perhaps afield, yet not devoid of significance for latter-day economic speculation, that this elimination of personality, and so of teleological content, from the sequence of events, and its increasing imputation to the conduct of the human agent, is incident to a growing resort to an apprehension of phenomena in terms of process rather than in terms of outcome, as was the habit in earlier schemes of knowledge. On this account the categories employed are, in a gradually increasing degree, categories of process,—"dynamic" categories. But categories of process applied to conduct, to discretionary action, are teleological categories: whereas categories of process applied in the case of a sequence where the members of the sequence are not conceived to be charged with discretion, are, by the force of this conception itself, non-teleological, quantitative categories. The continuity comprised in the concept of process as applied to conduct is consequently a spiritual, teleological continuity: whereas the concept of process under the second head, the non-teleological sequence, comprises a continuity of a quantitative, causal kind, substantially the conservation of energy. In its turn the growing resort to categories of process in the formulation of knowledge is probably due to the epistemological discipline of modern mechanical industry, the technological exigencies of which

enforce a constant recourse to the apprehension of phenomena in terms of process, differing therein from the earlier forms of industry, which neither obtruded visible mechanical process so constantly upon the apprehension nor so imperatively demanded an articulate recognition of continuity in the processes actually involved. The contrast in this respect is still more pronounced between the discipline of modern life in an industrial community and the discipline of life under the conventions of status and exploit that formerly prevailed.

To return to the benign order of nature, or the meliorative trend,— its passing, as an article of economic faith, was not due to criticism levelled against it by the later classical economists on grounds of its epistemological incongruity. It was tried on its merits, as an alleged account of facts; and the weight of evidence went against it. The belief in a self-realizing trend had no sooner reached a competent and exhaustive statement — *e.g.*, at Bastiat's hands, as a dogma of the harmony of interests specifically applicable to the details of economic life — than it began to lose ground. With his usual concision and incisiveness, Cairnes completed the destruction of Bastiat's special dogma, and put it forever beyond a rehearing. But Cairnes is not a destructive critic of the classical political economy, at least not in intention: he is an interpreter and continuer — perhaps altogether the clearest and truest continuer — of the classical teaching. While he confuted Bastiat and discredited Bastiat's peculiar dogma, he did not thereby put the order of nature bodily out of the science. He qualified and improved it, very much as Mill qualified and improved the tenets of the hedonistic psychology. As Mill and the ethical speculation of his generation threw more of personality into the hedonistic psychology, so Cairnes and the speculators on scientific method (such as Mill and Jevons) attenuated the imputation of personality or teleological content to the process

of material cause and effect. The work is of course, by no means, an achievement of Cairnes alone; but he is, perhaps, the best exponent of this advance in economic theory. In Cairnes's redaction this foundation of the science became the concept of a colorless normality.

It was in Cairnes's time the fashion for speculators in other fields than the physical sciences to look to those sciences for guidance in method and for legitimation of the ideals of scientific theory which they were at work to realize. More than that, the large and fruitful achievements of the physical sciences had so far taken men's attention captive as to give an almost instinctive predilection for the methods that had approved themselves in that field. The ways of thinking which had on this ground become familiar to all scholars occupied with any scientific inquiry, had permeated their thinking on any subject whatever. This is eminently true of British thinking.

It had come to be a commonplace of the physical sciences that "natural laws" are of the nature of empirical generalizations simply, or even of the nature of arithmetical averages. Even the underlying preconception of the modern physical sciences — the law of the conservation of energy, or persistence of quantity — was claimed to be an empirical generalization, arrived at inductively and verified by experiment. It is true the alleged proof of the law took the whole conclusion for granted at the start, and used it constantly as a tacit axiom at every step in the argument which was to establish its truth; but that fact serves rather to emphasize than to call in question the abiding faith which these empiricists had in the sole efficacy of empirical generalization. Had they been able overtly to admit any other than an associational origin of knowledge, they would have seen the impossibility of accounting on the mechanical grounds of association for the premise on which

all experience of mechanical fact rests. That any other than a mechanical origin should be assigned to experience, or that any other than a so-conceived empirical ground was to be admitted for any general principle, was incompatible with the prejudices of men trained in the school of the associational psychology, however widely they perforce departed from this ideal in practice. Nothing of the nature of a personal element was to be admitted into these fundamental empirical generalizations; and nothing, therefore, of the nature of a discretionary or teleological movement was to be comprised in the generalizations to be accepted as "natural laws." Natural laws must in no degree be imbued with personality, must say nothing of an ulterior end; but for all that they remained "laws" of the sequences subsumed under them. So far is the reduction to colorless terms carried by Mill, for instance, that he formulates the natural laws as empirically ascertained sequences simply, even excluding or avoiding all imputation of causal continuity, as that term is commonly understood by the unsophisticated. In Mill's ideal no more of organic connection or continuity between the members of a sequence is implied in subsuming them under a law of causal relationship than is given by the ampersand. He is busied with dynamic sequences, but he persistently confines himself to static terms.

Under the guidance of the associational psychology, therefore, the extreme of discontinuity in the deliverances of inductive research is aimed at by those economists — Mill and Cairnes being taken as typical — whose names have been associated with deductive methods in modern science. With a fine sense of truth they saw that the notion of causal continuity, as a premise of scientific generalization, is an essentially metaphysical postulate; and they avoided its treacherous ground by denying it, and construing causal sequence to mean a uniformity of coexistences and successions simply. But, since a strict

uniformity is nowhere to be observed at first hand in the phenomena with which the investigator is occupied, it has to be found by a laborious interpretation of the phenomena and a diligent abstraction and allowance for disturbing circumstances, whatever may be the meaning of a disturbing circumstance where causal continuity is denied. In this work of interpretation and expurgation the investigator proceeds on a conviction of the orderliness of the natural sequence. "Natura non facit saltum": a maxim which has no meaning within the stricter limits of the associational theory of knowledge.

Before anything can be said as to the orderliness of the sequence, a point of view must be chosen by the speculator, with respect to which the sequence in question does or does not fulfil this condition of orderliness; that is to say, with respect to which it is a sequence. The endeavor to avoid all metaphysical premises fails here as everywhere. The associationists, to whom economics owes its transition from the older classical phase to the modern or quasi-classical, chose as their guiding point of view the metaphysical postulate of congruity,—in substance, the "similarity" of the associationist theory of knowledge. This must be called their *proton pseudos*, if associationism pure and simple is to be accepted. The notion of congruity works out in laws of resemblance and equivalence, in both of which it is plain to the modern psychologist that a metaphysical ground of truth, antecedent to and controlling empirical data, is assumed. But the use of the postulate of congruence as a test of scientific truth has the merit of avoiding all open dealing with an imputed substantiality of the data handled, such as would be involved in the overt use of the concept of causation. The data are congruous among themselves, as items of knowledge; and they may therefore be handled in a logical synthesis and concatenation on the basis of this congruence alone, without committing the scientist to an

imputation of a kinetic or motor relation between them. The metaphysics of process is thereby avoided, in appearance. The sequences are uniform or consistent with one another, taken as articles of theoretical synthesis simply; and so they become elements of a system or discipline of knowledge in which the test of theoretical truth is the congruence of the system with its premises.

In all this there is a high-wrought appearance of matter-of-fact, and all metaphysical subreption of a non-empirical or non-mechanical standard of reality or substantiality is avoided in appearance. The generalizations which make up such a system of knowledge are, in this way, stated in terms of the system itself; and when a competent formulation of the alleged uniformities has been so made in terms of their congruity or equivalence with the prime postulates of the system, the work of theoretical inquiry is done.

The concrete premises from which proceeds the systematic knowledge of this generation of economists are certain very concise assumptions concerning human nature, and certain slightly less concise generalizations of physical fact,* presumed to be mechanically empirical generalizations. These postulates afford the standard of normality. Whatever situation or course of events can be shown to express these postulates without mitigation is normal; and wherever a departure from this normal course of things occurs, it is due to disturbing causes,— that is to say, to causes not comprised in the main premises of the science,— and such departures are to be taken account of by way of qualification. Such departures and such qualification are constantly present in the facts to be handled by the science; but, being not congruous with the underlying postulates, they have no place in the body of the science. The laws of the science, that which makes up the economist's theoretical knowledge, are laws of the normal case.

* See, *e.g.*, Cairnes, *Character and Logical Method* (New York), p. 71.

The normal case does not occur in concrete fact. These laws are, therefore, in Cairnes's terminology, "hypothetical" truths; and the science is a "hypothetical" science. They apply to concrete facts only as the facts are interpreted and abstracted from, in the light of the underlying postulates. The science is, therefore, a theory of the normal case, a discussion of the concrete facts of life in respect of their degree of approximation to the normal case. That is to say, it is a taxonomic science.

Of course, in the work actually done by these economists this standpoint of rigorous normality is not consistently maintained; nor is the unsophisticated imputation of causality to the facts under discussion consistently avoided. The associationist postulate, that causal sequence means empirical uniformity simply, is in great measure forgotten when the subject-matter of the science is handled in detail. Especially is it true that in Mill the dry light of normality is greatly relieved by a strong common sense. But the great truths or laws of the science remain hypothetical laws; and the test of scientific reality is congruence with the hypothetical laws, not coincidence with matter-of-fact events.

The earlier, more archaic metaphysics of the science, which saw in the orderly correlation and sequence of events a constraining guidance of an extra-causal, teleological kind, in this way becomes a metaphysics of normality which asserts no extra-causal constraint over events, but contents itself with establishing correlations, equivalencies, homologies, and theories concerning the conditions of an economic equilibrium. The movement, the process of economic life, is not overlooked, and it may even be said that it is not neglected; but the pure theory, in its final deliverances, deals not with the dynamics, but with the statics of the case. The concrete subject-matter of the science is, of course, the process of economic life,— that is unavoidably the case,— and in so far the discussion

must be accepted as work bearing on the dynamics of the phenomena discussed; but even then it remains true that the aim of this work in dynamics is a determination and taxis of the outcome of the process under discussion rather than a theory of the process as such. The process is rated in terms of the equilibrium to which it tends or should tend, not conversely. The outcome of the process, taken in its relation of equivalence within the system, is the point at which the inquiry comes to rest. It is not primarily the point of departure for an inquiry into what may follow. The science treats of a balanced system rather than of a proliferation. In this lies its characteristic difference from the later evolutionary sciences. It is this characteristic bent of the science that leads its spokesman, Cairnes, to turn so kindly to chemistry rather than to the organic sciences, when he seeks an analogy to economics among the physical sciences.* What Cairnes has in mind in his appeal to chemistry is, of course, the received, extremely taxonomic (systematic) chemistry of his own time, not the tentatively genetic theories of a slightly later day.

It may seem that in the characterization just offered of the standpoint of normality in economics there is too strong an implication of colorlessness and impartiality. The objection holds as regards much of the work of the modern economists of the classical line. It will hold true even as to much of Cairnes's work; but it cannot be admitted as regards Cairnes's ideal of scientific aim and methods. The economists whose theories Cairnes received and developed, assuredly did not pursue the discussion of the normal case with an utterly dispassionate animus. They had still enough of the older teleological metaphysics left to give color to the accusation brought against them that they were advocates of *laissez-faire*. The preconception of the utilitarians,— in substance the natural-rights pre-

* *Character and Logical Method*, p. 62.

conception,— that unrestrained human conduct will result in the greatest human happiness, retains so much of its force in Cairnes's time as is implied in the then current assumption that what is normal is also right. The economists, and Cairnes among them, not only are concerned to find out what is normal and to determine what consummation answers to the normal, but they also are at pains to approve that consummation. It is this somewhat uncritical and often unavowed identification of the normal with the right that gives colorable ground for the widespread vulgar prejudice, to which Cairnes draws attention,* that political economy "sanctions" one social arrangement and "condemns" another. And it is against this uncritical identification of two essentially unrelated principles or categories that Cairnes's essay on "Political Economy and Laissez-faire," and in good part also that on Bastiat, are directed. But, while this is one of the many points at which Cairnes has substantially advanced the ideals of the science, his own concluding argument shows him to have been but half-way emancipated from the prejudice, even while most effectively combating it.† It is needless to point out that the like prejudice is still present in good vigor in many later economists who have had the full benefit of Cairnes's teachings on this head.‡ Considerable as Cairnes's achievement in this matter undoubtedly was, it effected a mitigation rather than an elimination of the untenable metaphysics against which he contended.

The advance in the general point of view from animistic teleology to taxonomy is shown in a curiously succinct manner in a parenthetical clause of Cairnes's in the chap-

* *Essays in Political Economy*, pp. 260-264.

† See especially *Essays*, pp. 263, 264.

‡ It may be interesting to point out that the like identification of the categories of normality and right gives the dominant note of Mr. Spencer's ethical and social philosophy, and that later economists of the classical line are prone to be Spencerians.

ter on Normal Value.* With his acceptance of the later point of view involved in the use of the new term, Cairnes becomes the interpreter of the received theoretical results. The received positions are not subjected to a destructive criticism. The aim is to complete them where they fall short and to cut off what may be needless or what may run beyond the safe ground of scientific generalization. In his work of redaction, Cairnes does not avow, probably he is not sensible of — any substantial shifting of the point of view or any change in the accepted ground of theoretic reality. But his advance to an unteleological taxonomy none the less changes the scope and aim of his theoretical discussion. The discussion of Normal Value may be taken in illustration.

Cairnes is not content to find (with Adam Smith) that value will "naturally" coincide with or be measured by cost of production, or even (with Mill) that cost of production must, in the long run, "necessarily" determine value. "This . . . is to take a much too limited view of the range of this phenomenon."† He is concerned to determine not only this general tendency of values to a normal, but all those characteristic circumstances as well which condition this tendency and which determine the normal to which values tend. His inquiry pursues the phenomena of value in a normal economic system rather than the manner and rate of approach of value relations to a teleologically or hedonistically defensible consummation. It therefore becomes an exhaustive but very discriminating analysis of the circumstances that bear upon market values, with a view to determine what circumstances are normally present; that is to say, what circumstances conditioning value are commonly effective and at the same time in consonance with the premises of eco-

* "Normal value (called by Adam Smith and Ricardo 'natural value,' and by Mill 'necessary value,' but best expressed, it seems to me, by the term which I have used)." *Leading Principles* (New York), p. 45.

† *Leading Principles*, p. 45.

nomic theory. These effective conditions, in so far as they are not accounted anomalous and, therefore, to be set aside in the theoretical discussion, are the circumstances under which a hedonistic valuation process in any modern industrial community is held perforce to take place,— the circumstances which are held to enforce a recognition and rating of the pleasure-bearing capacity of facts. They are not, as under the earlier cost-of-production doctrines, the circumstances which determine the magnitude of the forces spent in the production of the valuable article. Therefore, the normal (natural) value is no longer (as with Adam Smith, and even to some extent with his classical successors) the primary or initial fact in value theory, the substantial fact of which the market value is an approximate expression and by which the latter is controlled. The argument does not, as formerly, set out from that expenditure of personal force which was once conceived to constitute the substantial value of goods, and then construe market value to be an approximate and uncertain expression of this substantial fact. The direction in which the argument runs is rather the reverse of this. The point of departure is taken from the range of market values and the process of bargaining by which these values are determined. This latter is taken to be a process of discrimination between various kinds and degrees of discomfort, and the average or consistent outcome of such a process of bargaining constitutes normal value. It is only by virtue of a presumed equivalence between the discomfort undergone and the concomitant expenditure, whether of labor or of wealth, that the normal value so determined is conceived to be an expression of the productive force that goes into the creation of the valuable goods. Cost being only in uncertain equivalence with sacrifice or discomfort, as between different persons, the factor of cost falls into the background; and the process of bargaining, which is in the foreground, being a process

of valuation, a balancing of individual demand and supply, it follows that a law of reciprocal demand comes in to supplant the law of cost. In all this the proximate causes at work in the determination of values are plainly taken account of more adequately than in earlier cost-of-production doctrines; but they are taken account of with a view to explaining the mutual adjustment and interrelation of elements in a system rather than to explain either a developmental sequence or the working out of a foreordained end.

This revision of the cost-of-production doctrine whereby it takes the form of a law of reciprocal demand is in good part effected by a consistent reduction of cost to terms of sacrifice,— a reduction more consistently carried through by Cairnes than it had been by earlier hedonists, and extended by Cairnes's successors with even more far-reaching results. By this step the doctrine of cost is not only brought into closer accord with the neo-hedonistic premises, in that it in a greater degree throws the stress upon the factor of personal discrimination, but it also gives the doctrine a more general bearing upon economic conduct and increases its serviceability as a comprehensive principle for the classification of economic phenomena. In the further elaboration of the hedonistic theory of value at the hands of Jevons and the Austrians the same principle of sacrifice comes to serve as the chief ground of procedure.

Of the foundations of later theory, in so far as the postulates of later economists differ characteristically from those of Mill and Cairnes, little can be said in this place. Nothing but the very general features of the later development can be taken up; and even these general features of the existing theoretic situation can not be handled with the same confidence as the corresponding features of a past phase of speculation. With respect to writers of

the present or the more recent past the work of natural selection, as between variants of scientific aim and animus and between more or less divergent points of view, has not yet taken place; and it would be over-hazardous to attempt an anticipation of the results of the selection that lies in great part yet in the future. As regards the directions of theoretical work suggested by the names of Professor Marshall, Mr. Cannan, Professor Clark, Mr. Pierson, Professor Loria, Professor Schmoller, the Austrian group,— no off-hand decision is admissible as between these candidates for the honor, or, better, for the work, of continuing the main current of economic speculation and inquiry. No attempt will here be made even to pass a verdict on the relative claims of the recognized two or three main "schools" of theory, beyond the somewhat obvious finding that, for the purpose in hand, the so-called Austrian school is scarcely distinguishable from the neo-classical, unless it be in the different distribution of emphasis. The divergence between the modernized classical views, on the one hand, and the historical and Marxist schools, on the other hand, is wider,— so much so, indeed, as to bar out a consideration of the postulates of the latter under the same head of inquiry with the former. The inquiry, therefore, confines itself to the one line standing most obviously in unbroken continuity with that body of classical economics whose life history has been traced in outline above. And, even for this phase of modernized classical economics, it seems necessary to limit discussion, for the present, to a single strain, selected as standing peculiarly close to the classical source, at the same time that it shows unmistakable adaptation to the later habits of thought and methods of knowledge.

For this later development in the classical line of political economy, Mr. Keynes's book may fairly be taken as the maturest exposition of the aims and ideals of the sci-

ence; while Professor Marshall excellently exemplifies the best work that is being done under the guidance of the classical antecedents. As, after a lapse of a dozen or fifteen years from Cairnes's days of full conviction, Mr. Keynes interprets the aims of modern economic science, it has less of the "hypothetical" character assigned it by Cairnes; that is to say, it confines its inquiry less closely to the ascertainment of the normal case and the interpretative subsumption of facts under the normal. It takes fuller account of the genesis and developmental continuity of all features of modern economic life, gives more and closer attention to institutions and their history. This is, no doubt, due, in part at least, to impulse received from German economists; and in so far it also reflects the peculiarly vague and bewildered attitude of protest that characterizes the earlier expositions of the historical school. To the same essentially extraneous source is traceable the theoretic blur embodied in Mr. Keynes's attitude of tolerance towards the conception of economics as a "normative" science having to do with "economic ideals," or an "applied economics" having to do with "economic precepts."* An inchoate departure from the consistent taxonomic ideal shows itself in the tentative resort to historical and genetic formulations, as well as in Mr. Keynes's pervading inclination to define the scope of the science, not by exclusion of what are conceived to be non-economic phenomena, but by disclosing a point of view from which all phenomena are seen to be economic facts. The science comes to be characterized not by the delimitation of a range of facts, as in Cairnes,† but as an inquiry into the bearing which all facts have upon men's economic activity. It is no longer that certain phenomena belong within the science, but rather that the science is concerned with any and all phenomena as seen from the point of

* *Scope and Method of Political Economy* (London, 1891), chaps. i. and ii.

† *Character and Logical Method; e.g.*, Lecture II., especially pp. 53, 54, and 71.

view of the economic interest. Mr. Keynes does not go fully to the length which this last proposition indicates. He finds * that political economy "treats of the phenomena arising out of the economic activities of mankind in society"; but, while the discussion by which he leads up to this definition might be construed to say that all the activities of mankind in society have an economic bearing, and should therefore come within the view of the science, Mr. Keynes does not carry out his elucidation of the matter to that broad conclusion. Neither can it be said that modern political economy has, in practice, taken on the scope and character which this extreme position would assign it.

The passage from which the above citation is taken is highly significant also in another and related bearing, and it is at the same time highly characteristic of the most effective modernized classical economics. The subject-matter of the science has come to be the "economic activities" of mankind, and the phenomena in which these activities manifest themselves. So Professor Marshall's work, for instance, is, in aim, even if not always in achievement, a theoretical handling of human activity in its economic bearing,— an inquiry into the multiform phases and ramifications of that process of valuation of the material means of life by virtue of which man is an economic agent. And still it remains an inquiry directed to the determination of the conditions of an equilibrium of activities and a quiescent normal situation. It is not in any eminent degree an inquiry into cultural or institutional development as affected by economic exigencies or by the economic interest of the men whose activities are analyzed and portrayed. Any sympathetic reader of Professor Marshall's great work — and that must mean every reader — comes away with a sense of swift and smooth movement and interaction of parts; but it is the movement of a

* *Scope and Method of Political Economy*, chap. iii., particularly p. 97.

consummately conceived and self-balanced mechanism, not that of a cumulatively unfolding process or an institutional adaptation to cumulatively unfolding exigencies. The taxonomic bearing is, after all, the dominant feature. It is significant of the same point that even in his discussion of such vitally dynamic features of the economic process as the differential effectiveness of different laborers or of different industrial plants, as well as of the differential advantages of consumers, Professor Marshall resorts to an adaptation of so essentially taxonomic a category as the received concept of rent. Rent is a pecuniary category, a category of income, which is essentially a final term, not a category of the motor term work or interest.* It is not a factor or a feature of the process of industrial life, but a phenomenon of the pecuniary situation which emerges from this process under given conventional circumstances. However far-reaching and various the employment of the rent concept in economic theory has been, it has through all permutations remained, what it was to begin with, a rubric in the classification of incomes. It is a pecuniary, not an industrial category. In so far as resort is had to the rent concept in the formulation of a theory of the industrial process,—as in Professor Marshall's work,—it comes to a statement of the process in terms of its residue. Let it not seem presumptuous to say that, great and permanent as is the value of Professor Marshall's exposition of quasi-rents and the like, the endeavor which it involves to present in terms of a concluded system what is of the nature of a fluent process has made the exposition unduly bulky, unwieldy, and inconsequent.

There is a curious reminiscence of the perfect taxonomic day in Mr. Keynes's characterization of political economy as a "positive science," "the sole province of which is to establish economic uniformities";† and, in this resort to

*"Interest" is, of course, here used in the sense which it has in modern psychological discussion.

† *Scope and Method of Political Economy*, p. 46.

the associationist expedient of defining a natural law as a "uniformity," Mr. Keynes is also borne out by Professor Marshall.* But this and other survivals of the taxonomic terminology, or even of the taxonomic canons of procedure, do not hinder the economists of the modern school from doing effective work of a character that must be rated as genetic rather than taxonomic. Professor Marshall's work in economics is not unlike that of Asa Gray in botany, who, while working in great part within the lines of "systematic botany" and adhering to its terminology, and on the whole also to its point of view, very materially furthered the advance of the science outside the scope of taxonomy.

Professor Marshall shows an aspiration to treat economic life as a development; and, at least superficially, much of his work bears the appearance of being a discussion of this kind. In this endeavor his work is typical of what is aimed at by many of the later economists. The aim shows itself with a persistent recurrence in his *Principles*. His chosen maxim is, "Natura non facit saltum," — a maxim that might well serve to designate the prevailing attitude of modern economists towards questions of economic development as well as towards questions of classification or of economic policy. His insistence on the continuity of development and of the economic structure of communities is a characteristic of the best work along the later line of classical political economy. All this gives an air of evolutionism to the work. Indeed, the work of the neo-classical economics might be compared, probably without offending any of its adepts, with that of the early generation of Darwinians, though such a comparison might somewhat shrewdly have to avoid any but superficial features. Economists of the present day are commonly evolutionists, in a general way. They commonly

* *Principles of Economics*, vol. i., Book I., chap. vi., sect. 6, especially p. 105 (3d edition).

accept, as other men do, the general results of the evolutionary speculation in those directions in which the evolutionary method has made its way. But the habit of handling by evolutionist methods the facts with which their own science is concerned has made its way among the economists to but a very uncertain degree.

The prime postulate of evolutionary science, the preconception constantly underlying the inquiry, is the notion of a cumulative causal sequence; and writers on economics are in the habit of recognizing that the phenomena with which they are occupied are subject to such a law of development. Expressions of assent to this proposition abound. But the economists have not worked out or hit upon a method by which the inquiry in economics may consistently be conducted under the guidance of this postulate. Taking Professor Marshall as exponent, it appears that, while the formulations of economic theory are not conceived to be arrived at by way of an inquiry into the developmental variation of economic institutions and the like, the theorems arrived at are held, and no doubt legitimately, to apply to the past,* and with due reserve also to the future, phases of the development. But these theorems apply to the various phases of the development not as accounting for the developmental sequence, but as limiting the range of variation. They say little, if anything, as to the order of succession, as to the derivation and the outcome of any given phase, or as to the causal relation of one phase of any given economic convention or scheme of relations to any other. They indicate the conditions of survival to which any innovation is subject, supposing the innovation to have taken place, not the conditions of variational growth. The economic laws, the "statements of uniformity," are therefore, when construed in an evolutionary bearing, theorems

*See, *e.g.*, Professor Marshall's "Reply" to Professor Cunningham in the *Economic Journal* for 1892, pp. 508-113.

concerning the superior or the inferior limit of persistent innovations, as the case may be.* It is only in this negative, selective bearing that the current economic laws are held to be laws of developmental continuity; and it should be added that they have hitherto found but relatively scant application at the hands of the economists, even for this purpose.

Again, as applied to economic activities under a given situation, as laws governing activities in equilibrium, the economic laws are, in the main, laws of the limits within which economic action of a given purpose runs. They are theorems as to the limits which the economic (commonly the pecuniary) interest imposes upon the range of activities to which the other life interests of men incite, rather than theorems as to the manner and degree in which the economic interest creatively shapes the general scheme of life. In great part they formulate the normal inhibitory effect of economic exigencies rather than the cumulative modification and diversification of human activities through the economic interest, by initiating and guiding habits of life and of thought. This, of course, does not go to say that economists are at all slow to credit the economic exigencies with a large share in the growth of culture; but, while claims of this kind are large and recurrent, it remains true that the laws which make up the framework of economic doctrine are, when construed as generalizations of causal relation, laws of conservation and selection, not of genesis and proliferation. The truth of this, which is but a commonplace generalization, might be shown in detail with respect to such fundamental theorems as the laws of rent, of profits, of wages, of the increasing or diminishing returns of industry, of population, of competitive prices, of cost of production.

In consonance with this quasi-evolutionary tone of the

*This is well illustrated by what Professor Marshall says of the Ricardian law of rent in his "Reply," cited above.

neo-classical political economy, or as an expression of it, comes the further clarified sense that nowadays attaches to the terms "normal" and economic "laws." The laws have gained in colorlessness, until it can no longer be said that the concept of normality implies approval of the phenomena to which it is applied.* They are in an increasing degree laws of conduct, though they still continue to formulate conduct in hedonistic terms; that is to say, conduct is construed in terms of its sensuous effect, not in terms of its teleological content. The light of the science is a drier light than it was, but it continues to be shed upon the accessories of human action rather than upon the process itself. The categories employed for the purpose of knowing this economic conduct with which the scientists occupy themselves are not the categories under which the men at whose hands the action takes place themselves apprehend their own action at the instant of acting. Therefore, economic conduct still continues to be somewhat mysterious to the economists; and they are forced to content themselves with adumbrations whenever the discussion touches this central, substantial fact.

All this, of course, is intended to convey no dispraise of the work done, nor in any way to disparage the theories which the passing generation of economists have elaborated or the really great and admirable body of knowledge which they have brought under the hand of the science; but only to indicate the direction in which the inquiry in its later phases — not always with full consciousness — is shifting as regards its categories and its point of view. The discipline of life in a modern community, particularly the industrial life, strongly re-enforced by the modern sciences, has divested our knowledge of non-human phenomena of that fulness of self-directing life that was once imputed to them, and has reduced this knowledge to terms

* See, *e.g.*, Marshall, *Principles*, Book I., chap. vi., sect. 6, pp. 105-108. The like dispassionateness is visible in most other modern writers on theory; as, *e.g.*, Clark, Cannan, and the Austrians.

of opaque causal sequence. It has thereby narrowed the range of discretionary, teleological action to the human agent alone; and so it is compelling our knowledge of human conduct, in so far as it is distinguished from the non-human, to fall into teleological terms. Foot-pounds, calories, geometrically progressive procreation, and doses of capital have not been supplanted by the equally uncouth denominations of habits, propensities, aptitudes, and conventions, nor does there seem to be any probability that they will be; but the discussion which continues to run in terms of the former class of concepts is in an increasing degree seeking support in concepts of the latter class.

THORSTEIN VEBLEN.

UNIVERSITY OF CHICAGO.

NOTES AND MEMORANDA.

THE NEW GERMAN BANK LAW.

The law of March 14, 1875, which transformed the old Bank of Prussia into the Reichsbank, was a remarkable piece of legislation. That it should have been based on the previous experience of Prussia, England, and other countries, is not strange, nor the fact that it contained some attempted improvements. The remarkable element was the foresight shown in the adaptation of the Reichsbank to the work which it had to do.

It was intended to create not only a central bank which should bring order and efficiency into the chaotic banking methods resulting from the multiplicity of State banking laws, give every needed stimulus to the anticipated industrial growth of the empire, and at the same time serve as an adequate regulator of the international movement of gold, but also a political instrument working towards the definitive consolidation of the German states into an imperial unity. It was to be a great bank, but at the same time an arm of the imperial government. In this respect the legislation is comparable with Alexander Hamilton's measures for the organization of the federal treasury, the assumption by the United States of the State debts, and the establishment of the United States Bank. If Hamilton's bank was not permanent, this was through no fault of his. While it lasted, it worked powerfully both towards political unity and the development of a sound and rational banking system. The success of the German plan has been even more marked, and its permanency seems assured. The influence of the Reichsbank in strengthening the imperial sentiment throughout Germany has been wholly satisfactory. The necessity of a centrally localized responsibility for the maintenance of the monetary standard, for the regulation of the gold movement within and without the country, and for the

elastic adaptation of the volume of currency to the industrial need for credit, has been convincingly shown. The force of opposition to the delegation of such large public powers to a private institution has been largely neutralized by the fact that the shareholders have only an advisory power in the conduct of the bank, and by the still more telling fact that, beyond a moderate dividend, the lion's share of the profits goes to the government.

The aim of the government in the original law was to secure a monopoly of note issue for the Reichsbank. This could not be done absolutely, owing chiefly to the strength of the particularist sentiment in the German states outside of Prussia. Various provisions in the law, however, placing restrictions upon other banks, forced many of these banks to give up their right of issue. In the mean time the spread of the use of deposits subject to check induced still other banks to renounce their issues, in order to secure freedom from the restrictions of the law. There remained seven of the original thirty-two banks of issue. The attempt to secure entire uniformity in the note circulation failed therefore of complete success. It succeeded so far, however, that, of the total amount of 385,000,000 marks of tax-free uncovered notes allowed for the empire, the contingent of the Reichsbank had increased, through the accretion of the contingents of the banks withdrawing from the system, from 250,000,000 to 293,400,000 marks before the passage of the new law.

The provision of the original law for regulating the amount of uncovered notes by laying a tax at the rate of 5 per cent. per annum upon them when in excess of a fixed limit must also be regarded as only a partial success. It has frequently happened that, when the market discount rate was 4 per cent. or even as low as 3 per cent., the Reichsbank has been forced to exceed its quota of uncovered notes, actually paying the tax of 5 per cent. on notes issued against loans on which it received only the lower rate. It was forced to do so by the fact that it could not afford to keep out of the market altogether. And it has done so when its metallic reserves were unusually large and there was no need for extraordinary precaution. The fact is that the men who devised

the system did not adequately forecast the enormous expansion of German industrial and commercial activity. The limit of uncovered notes, at first adequate, became entirely too small to enable the bank to hold its proper place in the system. On the other hand, in order to protect the gold supply of the empire, the bank has often had to raise its rate of discount above 5 per cent., when its uncovered issues were far below the limit. In other words, there has not been that influence of the tax upon the discount rate which, it was believed, would exist. The general lowering of the rate of interest has been another of the facts of recent economic development which the originators of the Reichsbank did not foresee.

Perhaps the most serious difficulty of the Reichsbank has been the practice of other banks of issue to cut its discount rate. This has enabled these banks at all times to keep out the greater part of their contingent of uncovered notes, being relieved from the necessity of guarding too carefully their own reserves by their ability at any time to draw upon the cash of the Reichsbank by rediscounts. Thus the burden of rendering safe the issues of the other banks falls in reality upon the Reichsbank. These issues remain in circulation as a practically fixed inelastic amount, which embarrasses greatly the efforts of the Reichsbank at critical times to defend its gold reserve, and tends to increase the fluctuations in the notes of the Reichsbank, already excessive. The uncovered notes of other banks are in effect not true bank-notes, but, like our national bank-notes, have no elasticity and act as a constant menace to the central gold depositary, which in Germany is the Reichsbank, and here is the federal treasury. The private or State banks of issue in Germany raid the reserves of the Reichsbank by bringing commercial paper there to be rediscounted. The national banks here raid the United States treasury by bringing in greenbacks and treasury notes for redemption.

The original law provided that every ten years, beginning with 1891, a renewal of the privilege must be had. This necessitated, under the requirements as to notice, the passage of the new law before the close of the year 1899. At these ten-year periods the imperial government has the right to wind up

the affairs of the Reichsbank or to purchase the stock at its par value, as well as to terminate the issue privileges of the other banks. Ten years ago the State Socialists agitated strongly for the exercise by the government of its option to purchase the stock. It was thought that the same proposal would again come to the front. But this party last year did not favor government purchase, because they thought such a pure State bank would simply strengthen the present Jingo policy of the government. And, as a matter of fact, the advocates of State ownership made no determined fight.

The government bill, arranged by agreement between the governments of the various states, after receiving the sanction of the Bundesrat, was introduced into the Reichstag the 21st of January, 1899. The Emperor in his speech from the throne very justly described it as a simple reform in certain unsatisfactory details, not as a radical change. The bill proposed an increase in the capital by 30,000,000 marks, making the total capital 150,000,000 marks; the raising of the surplus from 30,000,000 to 60,000,000 marks; the increase of the Reichsbank's quota of uncovered notes to 400,000,000 marks; the reduction of the ordinary stockholder's dividend to 5 per cent., before the division of profits with the imperial treasury (the law of 1889 had already reduced it from 8 to 6 per cent.); and the prohibition of a rate of discount by the private banks of issue lower than the rate of the Reichsbank. This last provision was suggested by the Bavarian government, although one of the strongest private banks is in Bavaria. The bill, after the first reading, was referred to a committee of twenty-eight members. Here a thorough discussion of its provisions was had. The opposition were not united. The Agrarians had no hostility to the last-named proposal, there being no private banks of issue in north-east Germany, where they are strongest. They were in favor of strengthening the power of the imperial government in the bank. They proposed government purchase of all the stock, the increase of the capital to 200,000,000 marks, government ownership of the new stock in any event, or the absolute limitation of private shareholders' profits. But none of their proposals was accepted. They were allied with the bimetallic interests; and their general aim

was to secure the larger circulation which they thought would result from a pure State bank, much as the "agrarian" party in this country thinks to secure cheap credit through government paper in place of bank-notes. The strongest opposition was that in behalf of the private banks of issue. South German chambers of commerce and other commercial interests were strenuous in opposing the prohibition to cut the Reichsbank's rate of discount. The committee finally compromised on this point, although the imperial government and the Reichsbank were urgently in favor of complete prohibition. The compromise was as follows: the Reichsbank must not cut its official rate when this is as high as 4 per cent.; and, when it discounts below its official rate, it must publish the fact in the *Reichsanzeiger*. The private banks, under penalty of losing their right of issue, must not discount below the Reichsbank's official rate, when that is as high as 4 per cent.; nor otherwise discount more than one-fourth of 1 per cent. below the official rate, nor more than one-eighth of 1 per cent. below the Reichsbank when it cuts its official rate.

The committee further changed the bill by fixing the amount of capital at 180,000,000 marks, and the limit of untaxed uncovered issue at 450,000,000 marks, and by reducing the shareholders' ordinary dividend to 3½ per cent. Profits in excess of this, after the surplus reaches 60,000,000 marks, are to go one-fourth to shareholders, three-fourths to the imperial treasury. The new stock is to be divided into shares of 1,000 marks instead of 3,000, one-half of them to be sold by the end of 1900 and the remainder by the end of 1905. Any premium on the new stock will go into the surplus fund. The new stock is to be sold in open market, and not to the holders of the old stock, in order to forestall criticism that the bank is owned by a ring of capitalists. The Reichsbank, further, is to pay to the imperial treasury by January 1, 1901, an amount equal to the par value of the notes of the old Bank of Prussia still in circulation.

The bill passed the second and third reading on April 27 and 28, and was accepted by the shareholders of the Reichsbank at an extraordinary general meeting held at Berlin, May 28.

It is thought the provisions in regard to discount by the

other banks of issue will lead some of them to relinquish their right of issue, so that uniformity of bank-note circulation will be still more nearly approached. The preponderance of the Reichsbank in the system is greatly increased by the large addition to its contingent of tax-free uncovered notes, the entire increase from 385,000,000 to 541,600,000 marks for the empire going to the Reichsbank. The brilliant success of the Reichsbank in meeting the most trying difficulties has won for it almost unlimited public approval; and the changes of the new law are all in the nature of a vote of confidence, equipping it more adequately for the larger tasks it has now to perform with the vast growth of Germany's commercial and industrial interests. No radical change was found necessary.

One very striking fact is the absence of any important opposition to the Reichsbank on the part of the great deposit banks, which are naturally its rivals. This is to be explained in part by the rapid development of deposit banking in Germany, due to a really marvellous expansion of business, which has afforded ample room for profitable deposit banking. But, further than this, explanation must be sought in the special service which the Reichsbank performs for these other institutions. They need have relatively small concern for their own cash reserves so long as the Reichsbank stands as the centre of the system, ready at all times to rediscount their holdings of paper at need. The Reichsbank has become thus what the Bank of England is to the other English banks, or the Bank of France to its great banking clients,— a bank of banks.

The banking system of Germany presents certain striking analogies to that of the United States. In some degree, similar conditions, economic and political, have existed in both countries during the century. Germany was belated in her economic development as compared with England and France, and in many respects was not so advanced as the United States. In the main, the two countries were in nearly the same stage of progress. In Germany, political unity was scarcely an ideal until after Napoleon's conquest; and real union of sentiment was not yet achieved in America. In both countries, however, during the second third of this century, the new economic order was silently working towards a closer

union, industrial and political. During this same period the banking of the two countries was in a chaotic state, owing largely to the conflict of state laws. A multitude of private banks of issue was the result, with reckless rivalry in note issue. Uniformity in notes or in their regulation was alike foreign to the systems of the two countries. The Civil War wrought the basis for true political union of the United States, and a few years later the German states found themselves united as the outcome of a great war. The National Banking Law was a measure which aimed to strengthen the central government while unifying the system of note issue. Such was likewise the German law. Both systems were not really new creations, but the outgrowth of previous experience and development,— the adaptation of old principles to changed facts. In the main, the two systems are in line with the political opinion of the two countries. In Germany the one central institution is designed to dominate the banking business of the whole country. In the United States, free banking, under a general law, leaves the separate banks to work out their own union through voluntary association in clearing houses. In the United States, however, the ultimate gold reserve, which in Germany is in the Reichsbank, is kept by the federal treasury,— an anomalous condition, and not a satisfactory one. Aside from the degree of control over the banking system exercised by the federal government,— and it is by no means slight,— the central regulating power is found in the New York Clearing House. While not centralized in law, the banks have centralized their business to a remarkable degree, — a fact often overlooked by European critics. Centralization of business, as all experience shows, is a necessity of modern banking. The American system has demonstrated that this centralization is consistent with free banking; *i.e.*, may be wrought out by a kind of federative process, in which the dominance of a great central bank is not essential. Our system conforms to the republican idea of government, as the German system is in harmony with the idea of personal government.

The new legislation in Germany is a model of conservative change to meet the demands of progress. Our system needs

relatively few changes to make it conform to the present conditions. It needs a provision for elasticity in the note circulation, involving the abandonment of bond security. Uniformity it already has, and this would not be impaired if State banks submitting to the requirements of the federal law were allowed in the system. The necessary centralization could well be made secure and perfected by a legal recognition of the New York Clearing House as the guardian of the gold reserve, together with some degree of active participation by the Comptroller of the Currency in the work of the Clearing House. This latter change would tend better to keep the banks cognizant of their public duty, and to maintain the necessary connection between the government's finances and the business of the country. All of these changes would be the natural outgrowth of our experience. We want, not to tear down, but simply to make strong where we have found weakness, the system which we have, and which accords with our economic and political ideals. For procedure on this principle the German government have just afforded us an object-lesson in their new banking law.

SIDNEY SHERWOOD.

JOHNS HOPKINS UNIVERSITY.

BRITISH TAXATION: IMPERIAL AND LOCAL.*

During the last few years there has been a lively discussion in Great Britain as to the relation between national and local taxation, in consequence, to a large extent, of the considerable changes effected by recent legislation. It is only within the last twelve years that the machinery of local government has received its present form. The act establishing county councils in England came in 1889, and was followed by the creation of county councils in Scotland a year later. Parish

* *Memoranda, chiefly relating to the Classification and Incidence of Imperial and Local Taxes.* (*Royal Commission on Local Taxation.*) London, Eyre & Spottiswoode, 1899. Folio, 250 pages. Price 2*s*. Parliamentary Blue Book, No. C.-9528.

councils were called into existence throughout England and Wales in 1894. In 1898 Irish local government was entirely reorganized, and placed for the first time on a democratic and representative basis. Only last year London government received what is likely to remain its permanent shape by an act which has not yet come into operation. These administrative changes have had financial aspects. The act establishing English county councils allotted several million pounds annually from national funds to local governing bodies; and the general tendency has been for local bodies to have assigned to them new duties to carry out and new burdens to bear, while to balance these the central government has given more and more assistance to local authorities by way of grants in aid.

Meanwhile the rates — *i.e.*, the local taxes, which are assessed on the annual value of houses, lands, and immovable property at so much in the pound — have been steadily increasing for half a century. In the United Kingdom the rates are almost the sole sources of local revenue, other than the grants already mentioned from the central exchequer. They are collected from the occupiers, the owners of property making no direct contribution. The history of rates in England is a long and obscure one. Originally, it would seem, rates were a personal assessment on the parishioners, who were taxed according to their several abilities to pay; but by a slow process, lasting into the nineteenth century, rates came to be levied only on real — or, rather, immovable — property. Personal property was definitely exempted in 1840 from paying rates by an act of Parliament, which, being in form a merely temporary measure, has still to be renewed annually by the Expiring Laws Continuance Bill. It has never ceased to be urged in certain quarters that personal property ought to contribute towards local taxation. On the other side, it is contended that personal property ultimately pays enough or even too much, since the contributions to local authorities from national funds are chiefly derived from personal property. This is one element in the present problem.

The other element is that the amount spent by the local authorities has greatly increased and is becoming increasingly

burdensome. Although the contributions from the State to the localities have been largely augmented in recent years, and although the value of property on which the rates are levied has risen enormously, yet in spite of all this the burden of the rates has grown heavier. In the rural districts, it is true, rates have been decreasing for forty years; but in the towns and urban districts they have increased to a far greater extent. The causes of this increase have to be sought partly in the Education and Public Health Acts and similar legislation, partly in the growth of industrial population and in the town improvements and other public works which it has rendered necessary, and partly, though to lesser extent, in the better provision which is now made for paupers and other dependent classes.

Moreover, English local taxation has been indirectly affected by the fact that, since the country finally accepted free trade, the value and importance of English agriculture have notably declined. Much agricultural property now lets at less than half its former value. The tendency is everywhere to turn arable land into pasture: some land has gone out of cultivation. This change has been very marked during the last twenty years, owing to the immense development of steam merchant-shipping and the opening of new corn and cattle regions in America, Australia, and the East. Thus the income from landed estates in England, so far as that income is dependent on agriculture, has much diminished. But there has always been a majority in the British Parliament drawn from the landed class, and party and sectional divisions have seldom been strong enough to break down the united front which the land-owners have maintained against the other interests. As a result, the agricultural land of England has been repeatedly favored by partial exemption from taxation. And now, not content with this, the land-owning party is actually attempting to get the whole system and basis of English local taxation changed, in order to relieve the land-owners from a taxation which they deem excessive and unjust.

The power and activity of "the Country Party," as this landed interest is called, is one of the most remarkable facts of British politics at the present time. It explains many things. Thus it has led to the exclusion of the agricultural laborers

from all benefits under the recent legislation giving compensation for injuries to workmen. Though this law is avowedly the carrying out of Mr. Chamberlain's demand for "compensation to every laborer for every injury," and though Mr. Chamberlain has always regarded himself as the tribune of the agricultural laborer, yet the rural laborer is expressly excluded from all benefit of this statute. The activity of "the Country Party" has been greatly increased since the passing of the only great measure, affecting their interests, which has been carried in spite of them; namely, Sir William Harcourt's Finance Act of 1894, by which the death duties on land and other property were equalized and increased. Their defeat on this occasion has furnished them with an argument for further demands on the treasury; and, favored for the last four and a half years by a friendly government, they have succeeded in getting an act passed which relieves agricultural land of half the rates upon it. Their old contention — that personal property should bear more of the burdens of local taxes — has been pressed upon the attention of the ministry with such effect that the present government has recently appointed a Royal Commission on Local Taxation, and has instructed it "to inquire into the present system under which taxation is raised for local purposes, and report whether all kinds of real and personal property contribute equitably to such taxation; and, if not, what alterations in the law are desirable, in order to secure that result." This Royal Commission has been interpreting the question referred to it in a liberal spirit, and has already published two reports on aspects of local taxation only remotely connected with the prime question submitted to it. The present volume is another outcome of the Royal Commission. It contains a Memorandum by Sir Edward Hamilton, of the Treasury, on the Imperial Relief of Local Burdens and on the System of Imperial and Local Taxation. This is followed by the answers of a number of "financial and economic experts," to each of whom a series of questions, fifteen in number, were submitted by the Commission.

In the Memorandum of Sir E. Hamilton, which begins with an account of the various changes which local taxation in England has experienced since 1834, we find, first, a full description

of the present system of local finance, and, then, an attempt to define and classify taxes. The chapters on these subjects are followed by three others on English taxation in the light of the proposed classification; and there is a chapter of concluding remarks. Here, then, from the pen of a very high official, the Chief Permanent Secretary of the Treasury, we have a complete account of the English system of local taxation as it exists to-day. Placed by the side of Mr. Goschen's famous *Return on the Increase of Local Taxation*, in 1870, and Mr. Fowler's *Return on Local Taxation*, in 1893, this Memorandum completes a trilogy of blue books, which will remain classic works in English Finance.

From an academic point of view the answers to the questions by the sixteen financial and economic experts are of even greater interest. These experts include distinguished civil servants (Lord Farrer, since deceased, and Sir Robert Giffen), a distinguished statesman (the Rt. Hon. L. Courtney, M.P.), university professors (Professors Sidgwick, Marshall, Edgeworth, Bastable, and Gonner), and eight others. The student of economics has here the pleasure of seeing how the professors reply to examination questions; and by comparing their answers on any point (which is easy to do with the Comparative Reference Table on p. 5) the student has an opportunity to discover how widely experts and professors may differ.

The first of these questions refer to a certain tabular Classification of English Imperial Taxation, which was drawn up by Sir Alfred Milner a few years ago for the Royal Commission on Agricultural Depression. It is now revived to receive the criticisms of the experts. Mr. Courtney objects to it as "proceeding upon an entirely wrong method" (p. 85); while Professor Marshall declares that all such tables, "when taken as a basis for a scheme of finance, suggest wrong inferences." Sir Alfred Milner's classification had been attempted with the hope that it might contribute to a decision as to the relative incidence of taxation on personal and real property. By the side of the list of taxes, it places two main columns of figures, the first setting forth the amounts of the Taxes incidental to Ownership, Occupation, or Transfer of Property, and the second the amounts of Taxes not incidental to Property. The

table is interesting as showing the taxation of the country at a glance, as well as for the attempt to determine to what extent the income tax and other impositions fall upon property, and for its statistical results; but it does not really teach us who the persons are who bear the ultimate weight of the taxation. This the experts are not slow to point out.

The next three questions addressed to the experts are more pertinent, and deal with the equity of taxes and their incidence. Many arguments and discussions are here to be found, applicable to the present problems of English taxation, and important for any consideration of fiscal policy. For example, the principle is well illustrated that "the best way of answering the question upon whom rests the ultimate incidence of a tax is to be found in pursuing an investigation as to who would be benefited if the tax were abolished" (Mr. Courtney, p. 86). Again, take the question, "Could you state your views as to the real incidence of the death duties?" On this clear issue we may collect a variety of views. Mr. Courtney, whose authority in English political and academic circles is not likely to be realized by those who are not aware of his experience and his intellectual and moral power, says, "The heir . . . is evidently the primary loser, . . . and he must remain so" (p. 88). Professor Sidgwick, on the other hand, holds "that in this case even the primary incidence is not clear. When property is taken *in transitu* from the dead to the living, the burden of loss may be borne according to circumstances: (1) by the heirs; (2) by persons who do not receive legacies which would otherwise have been left them; or (3) by the deceased proprietors" (p. 105). Professor Marshall gives some remarks which are not a direct reply to the question, since we must gather his view from such a sentence as that "the fact that death duties seem less inequitable, and to press less hardly on any one, than other taxes of equal intensity, suggests that they may still affect savings much as our forefathers thought they did" (p. 123). While Professor Bastable, whose writings on Public Finance have led him to be considered in England as a standard authority on these matters, maintains "the old doctrine that death duties fall finally, as well as immediately, on the payer, bearing in mind, of course, the remote possibility

that they may be paid out of capital, and thus reduce the accumulated wealth of the country, raise interest, and lower wages" (p. 142). *Tot homines, tot sententiae!*

Questions 7 to 10 refer to the particular problems of local taxation in England at the present time; questions 7 and 8 to the very complicated system under which the central government assists the localities. The central authorities issue three million licenses of nearly forty kinds. The sums paid for these are handed over to the local authorities, the amount thus passing approaching £4,000,000 sterling. On the other hand, there are nearly thirty different objects of local expenditure in England, though fewer in Scotland or Ireland, for which the central government pays in whole or in part, but leaves the administration to the localities. These are set out in detail on pages 56, ff. Question 9 asks whether local rates should be divided between owners and occupiers. This is already done in Scotland and Ireland; and the great weight of opinion in the country, in Parliament, and among these experts, favors the division. It is due to the power of "the Country Party" in the House of Commons that the division has not been introduced. Question 10 asks whether ground values should be separately rated for local purposes. It is most significant that this measure, which but a short time ago was proposed only by "radical land reformers," is now asked for by the great municipal corporations (like Glasgow) and supported by high expert authority. For we find that of the fourteen experts who reply to the question, eight favor the taxation of ground values, while six are opposed to it; but several of the latter express their approval or disapproval under such reservations that we find only three are emphatically against the proposal. The remarks on this matter made by Professor Marshall and others are affording the material of a press and platform campaign in favor of what may prove the next important change in the finance of English local government.

Questions 11 to 13 are connected with the effects of rates upon rents. Their presence here is due, no doubt, to the tenderness felt by Parliament and by this Royal Commission towards those whose income reaches them in the form of rent.

The last two questions of the list are the 14th, which asks

what methods of raising local revenues otherwise than by rates are possible; and the 15th, which offers the experts an opportunity to state any considerations on the subject which have not fallen within the scope of their earlier answers. The question about other possible sources of revenue brings out some interesting suggestions. One is that different experiments might be tried in different localities; another, that octrois are possibly suitable for adoption in England; another, that taxes on advertisements, amusements, horses, vans, and wheels, should be tried, and so on. The only proposal in this connection that is supported by as many as five of the experts is that the Inhabited House Duty should be transferred from the central government to the localities. This change has been advocated for thirty years. The reason why no government has yet tried to effect it is that the Conservatives have not been attracted until recently towards measures likely to benefit the towns more than the country districts, while the Liberals do not care to make a change which would benefit the rich districts in the towns more than the poor. The Inhabited House Duty, it will be recalled, is not levied on dwellings below £20 annual value, and is graduated up to £60 annual value.

Taking this volume as a whole, it is a blue book of singular interest. It contains a history of a very important side of English administration and finance during the whole of the nineteenth century, and a discussion from several points of view and by well-known writers and authorities of the present-day problems of English taxation and the changes that might be proposed in it. It furnishes the materials, also, for comparing the opinions and methods of reasoning of economic theorists, when they are brought face to face with problems of government. For many years to come it will have a leading place among financial books of reference.

JOSEPH KING.

LONDON.

CHARLES FRANKLIN DUNBAR, Professor of Political Economy in Harvard University, died on January 29, 1900, in his seventieth year. A graduate of Harvard College of the class of 1851, he was a devoted son of the University, and served her in varied capacities through a long and honorable career. For near thirty years, from 1871 until his death, he was professor; from 1876 to 1882, Dean of the Faculty of Harvard College; from 1890 to 1895, first Dean of the reorganized Faculty of Arts and Sciences in Harvard University. His sagacity and tact led naturally to his call to the administrative offices, which absorbed a large share of his energy, and thus stood in the way of the execution of his literary plans. On the foundation of the *Quarterly Journal of Economics* in 1886, he was appointed editor, and during the ten years of his service in that post established the position of the Journal as a medium for scientific investigation and discussion. His published writings gave but fragmentary indication of the breadth of his interests, the solidity of his learning, the independence and soundness of his judgment; yet served to establish firmly his reputation as a scholar and a thinker. His death is a loss to the University and to economic science, and most of all to those whose esteem and affection he had won in long years of close association.

THE Labor Department of the British Board of Trade has issued the first number, for 1898–99, of an *Abstract of Foreign Labour Statistics*, which promises to add another to the blue-books prized for their well-arranged matter not elsewhere easy of access. The subjects dealt with are Wages, Hours of Labor, Trade Disputes, and Co-operation. There are forty-eight tables on Wages, for twelve countries; twenty-two on Hours of Labor, for ten countries; twenty-two on Trade Disputes, for five countries; and twenty-four on Co-operation, for seven countries. As Mr. A. E. Bateman states in his introduction, the Abstract is the first of its kind published in any country; and it presents successfully, "in concise form, the principal details contained in available statistics." In later issues it is proposed to include such subjects as Trade-unions, Arbitration and Conciliation, Industrial Accidents, Workmen's Insurance.

Of a similar sort, and of no less service, is the *Annuaire de la législation du travail*, of which the second number has already been published by the Labor Department of Belgium. Here is reprinted, in French, the text of the laws relating to labor enacted from year to year in the important countries.

THE firm of Frommann, in Stuttgart, announces a series of compact biographies of *Politiker und Nationalökonomen*, to be edited by Professors Schmoller and Hintze, of Berlin. The first volume, and the only one published as yet, is on Macchiavelli, by Professor Fester, of Erlangen. Others of interest to students of economics are announced as follows: on Bodin, by Professor Bezold; Turgot, by Dr. Grünberg; Adam Smith, by Professor Hasbach; Marx, by Dr. Oldenberg; St. Simon, by Dr. Waentig. The volumes are addressed, not to specialists, but to general readers, and more particularly to university students.

Two of the minor countries of Europe, Holland and Switzerland, have recently enacted laws for the compulsory

insurance of workmen, thus enlarging still further the range of this far-reaching method of social reform.

The act in Holland, which was in its final stages in December last, provides for insurance against accident only. A government insurance office is established; in this respect the German example of organization by industries, which experience has shown to be cumbrous and expensive, is wisely departed from. The premiums are paid entirely by employers, who are prohibited from making deductions from wages. The indemnity is ordinarily 70 per cent. of the workman's wages; and, since there is no sick insurance law in Holland, it begins to be payable three days after the accident. The act does not apply to domestic servants, to seamen, or to persons employed in agriculture.

The Swiss act, passed on October 14, 1899, has much wider scope. It establishes insurance for both sickness and accidents; and it applies to all employees earning incomes up to 5,000 francs, including domestic servants and those engaged in agriculture.

For sickness, insurance associations are set up, ordinarily with geographical boundaries; but enterprises employing at least one hundred persons may, with the consent of a majority of the employees, establish associations of their own. The standard sick indemnity is 60 per cent. of wages, with a funeral benefit of 20 to 40 francs in case of death. The Confederation pays a fixed subsidy of one centime per day per person insured. The rest of the funds come from contributions levied on the employers, who may then deduct one-half from the stipulated wages. The usual levy on employers may not exceed 4 per cent. of wages; but extra contributions may be required in industries where there is exceptional danger of illness.

The accident insurance organization is centralized, as in Holland: a federal insurance office is created, which manages the whole system. The indemnities are in the nature of pensions in case of permanent or long-continued disability or of death; the sick benefits providing for temporary injuries and for the first stages of longer injuries. The standard pension for total disability is 60 per cent. of wages; but for indigent

persons this may be raised to 100 per cent. In case of death there is a pension of 30 per cent. for the widow, with fractions for other dependents, the whole not to exceed 50 per cent. The Confederation contributes one-fifth of the needed premiums: the rest is levied on employers, who may deduct one-fourth of their payments (*i.e.*, one-fifth of the whole) from the wages. The system of "capitalization" is adopted,— not the assessment plan, but the levy of strict actuarial premiums, which necessarily will involve the accumulation and investment of considerable reserve funds.

The referendum is likely to be asked on this statute, and it remains to be seen whether it will be confirmed by the popular vote. But all the chances are in its favor. It will not go into effect in any case until January 1, 1903.

THE report of the Commissioner of Internal Revenue for 1898–99 gives information for the first fiscal year in which the new and increased excise taxes of the "war revenue act" were in force, and shows how rich a source of revenue is here at the disposal of the federal government. The act of June 13, 1898, it will be remembered, doubled the taxes on tobacco and on beer, from 6 cents per pound to 12 in the one case, and from $1 per barrel to $2 in the other. The tax on cigars went up from $3 to $3.60 per 1,000, that on cigarettes from $1 to $1.50. (Distilled spirits remained where they were, at $1.10 per gallon.) The elaborate system of stamp taxes was devised; special taxes in the nature of licenses were imposed on certain occupations; and a tax, graduated according to amount and degree of consanguinity, was levied on inheritances of personal property.

In December, 1898, the Secretary of the Treasury, having before him the receipts for the first quarter of the fiscal year, estimated that the internal taxes, new and old, would yield for 1898–99 a revenue of $270,000,000. The outcome was remarkably close to this estimate. The receipts were, in round numbers, $273,500,000. The receipts from customs, which had been estimated at $195,000,000, proved to be

$206,000,000. The greater regularity of the excise revenue, and the consequent greater ease of forecasting it, are familiar phenomena; and they recur in this year's experience, the excise receipts, notwithstanding important changes in the rates, being much more closely estimated than the customs receipts, for which the duties of the tariff act of 1897 remained in force without change.

The productiveness of the different taxes is indicated by the following statement of the receipts from the more important sources, and of the increase in 1899 over 1898 (the figures stating millions of dollars):—

	Fiscal year		Increase in 1899.
	1898.	1899.	
Spirits	86.2	92.2	6.0
Tobacco	17.6	28.4	10.8
Cigars and cigarettes	17.6	21.0	3.4
Beer	38.9	67.7	28.8
Special taxes on occupations	—	4.9	4.9
Of which on bankers	—	3.8	3.8
Stamp taxes, Schedule A (documents)	.7	38.6	37.9
Stamp taxes, Schedule B (proprietary medicines and the like)	—	5.2	5.2
Inheritance tax	—	1.2	1.2
Total receipts from all internal taxes,	170.9	273.5	102.6

The tax on inheritances, it will be noticed, yielded but little,—mainly because the settlement of few estates had progressed so far as to make it possible to fix the amount of tax due. The suits now pending, in which the constitutionality of this levy is to be tested, probably served also to prevent taxes from being paid, even on settled estates. A considerable accretion of revenue from this source will come from estates of persons deceased in 1898–99, if the constitutionality of the tax is sustained.

RECENT PUBLICATIONS UPON ECONOMICS.

Chiefly published or announced since November, 1899.

An asterisk prefixed to a title indicates a second and more detailed notice of a book announced in a previous number.

I. GENERAL WORKS, THEORY AND ITS HISTORY.

BROGLIO D' AJANO (R.). Il salario nella teoria e nella pratica. Camerino: tip. Marchi. 8vo. pp. 125.

[On the theory of wages; with sketch of the history of wages, and consideration of the teachings of economists from Adam Smith to the present time.]

COSSA (Prof. Emilio). Principii elementari per la teoria dell' interesse. Milan: U. Hoepli. 8vo. pp. 143.

[A discriminating eclectic summary, with attention to the best recent discussion, of the theory of capital and interest.]

DUPRAT (G. L.). Science sociale et démocratie. Essai de philosophie sociale. Paris: Giard et Brière. 8vo. 5 fr.

[Social philosophy leads to confidence in the future of democracy: education the means to reach the democratic ideal. The author is professor of philosophy at the Lycée of Alençon; the book is in the Bibliothèque sociologique internationale.]

GAUDEMET (E., docteur en droit). L'abbé Galiani et la question du commerce des blés à la fin du règne de Louis XV. Paris: Rousseau. 8vo. pp. 232.

[A scholarly and helpful contribution to the history of economic thought. Galiani's originality is specially insisted on.]

GIUDICE (A.). Il valore et le fondamente sientifiche del socialismo. Palermo: Sandron. 8vo. pp. 152. 2.50 l.

[Topics: Value in use, value in exchange, the measure of value, the historic law of value, distribution of value in exchange. . . .]

GRABSKI (St.). Zur Erkenntnisslehre der volkswirthschaftlichen Erscheinungen. Leipzig: C. L. Hirschfeld. 8vo. 4.20 m. [Announced.]

GRAHAM (W.). English Political Philosophy, from Hobbes to Maine. London: Arnold. 8vo. pp. 446. 10s. 6d.

HEYN (O.). Theorie des wirthschaftlichen Werths. I. Der Begriff des Werths. Berlin: Puttkammer & Mühlbrecht. 8vo. pp. 132. 3 m.

LAGRÉSILLE (H.). Vues contemporaines de sociologie et de morale sociale. Paris: Giard et Brière. 8vo. 5 fr.

[The author, an engineer, conceives the family to be the unit for sociological inquiry; and believes sociology to be a science of ethics.]

LAPOUGE (G. Vacher de). L'Aryen: son rôle social. Paris: A. Fontemoing. 8vo. Charts. 10 fr.

[Contents: Définition de l'Aryen; Origine; Les Aryens avant l'histoire; Les Aryens historiques; Psychologie; Rôle social, supériorité des Aryens. . . .]

LORIA (A.). La théorie sociologique de M. Kidd. Paris: Giard et Brière. Pamphlet, 8vo. 1 fr.

MONTEMARTINI (G.). Introduzione allo studio della distribuzione delle richezze. Milan: Società editrice. 8vo. pp. 176.

[Reprinted from the Enciclopedia giuridica italiana.]

———. La teoria delle produttività marginali. Pavia: tip. Fusi. 8vo. pp. 230. 3.50 l.

[A summary statement of the applications which have been made of the theory of marginal utility to value, to distribution, to production; with abundant references to recent economic literature.]

MOORE (J. Howard). Better World Philosophy. A Sociological Synthesis. Chicago: Ward Waugh Co. 8vo. pp. 275. $1.

[A fervent protest against the competitive régime. Contents: The Social Problem; Egoism and Altruism; The Preponderance of Egoism; The Social Ideal; The Derivation of the Nature of Living Beings; Race Culture; Individual Culture. The social Ideal is "*from* each according to his ability, *to* each according to his needs."]

RICARDO (David). Letters of David Ricardo to Hutches Trower and others, 1811–23. Edited by James Bonar and J. H. Hollander. Oxford: The Clarendon Press. 8vo. pp. 272. 7*s*. 6*d*.

[Of the 66 letters, 54 are to Trower,—a stockbroker, close friend to Ricardo. The editors, whose work is excellent, believe that with this volume "practically all of Ricardo's informal writings have been made accessible." The letters to Trower had been deposited in manuscript at University College, London.]

RIEKES (Dr. H.). Wert und Tauschwert. Zur Kritik der Marxschen Wertlehre. Berlin: L. Simion. 8vo. pp. 69. 1.20 m.

SCHÜLLER (Dr. R.). Die Wirthschaftspolitik der historischen Schule. Berlin: C. Heymann. 8vo. pp. 137. 2.40 m.

[A protest against "einseitige Historismus"; the historical school alleged to have been in opposition to progress throughout this century. I. Die Periode der klassischen Nationalökonomie; II. Die Periode der historischen Schule; III. Die wirthschaftspolitischen Methoden. Most of the space is given to writers of the earlier period.]

SMART (William). The Distribution of Income. London and New York: Macmillan. 8vo. pp. 356. $1.60.

[On the theory of distribution; beginning with a consideration of the money income and the real income of the community, and passing to the employer and the laborer. The conclusion is that "rough justice" exists.]

THURSTON (H. W.). Economics and Industrial History for Secondary Schools. Chicago: Scott, Foresman & Co. 12mo. pp. 300. $1.

[The author teaches social and economic science in the Chicago Normal School. "The laboratory study of existing economic life is supplemented and enriched by showing the evolution of the industrial present from the industrial past." Part I. Industrial Observation and Interpretation (an interesting application of the "laboratory method"); Part II. Industrial History of England and the United States; Part III. Elements of Economic Theory.]

WOLF (J.). Der Student und die sociale Frage. Berlin: G. Reimer. 8vo. .50 m.

["Festrede" before a students' society, proclaiming dissent from the Kathedersozialisten, and finding the solution of social problems in the further development of the "bürgerliche Wirthschaftsordnung."]

ZENKER (E. v.). Die Gesellschaft. I. Band: Natürliche Entwickelungsgeschichte der Gesellschaft. Berlin: G. Reimer. 8vo. pp. 239. 6.50 m.

[The first instalment, scholarly and well written, of an eclectic survey of sociology, a "facit des bisher Geleisteten." Theil I. Elemente der socialen Entwickelung, with chapters on societies of ani-

mals, primitive man and primitive industry, origin of the family, clan societies; Theil II. Politische Entwickelung, with chapters on the process and the forms of political development.]

In Periodicals.

BERARDI (D.). Utilità limite e costo di riproduzione. Giorn. degli Econ., Oct., Nov., Dec. [Instalments of an extended discussion; to be continued.]

CASSEL (Dr. G.). Grundriss einer elementaren Preislehre. Zeitschr. f. ges. Staatsw., 55, Heft. 3. [A survey of the theory of value, in a series of numbered propositions, concluding that "nothing in the theories of marginal utility withstands a severe criticism."]

DUFF (Sir M. Grant). Walter Bagehot. National Rev., Dec.

GERLACH (O.). Kant's Einfluss auf die Sozialwissenschaft in ihrer neuesten Entwickelung. Gedächtnissrede vor der Kantgesellschaft 22 April, 1899. Zeitschr. f. ges. Staatsw., 55, Heft 4.

GIDDINGS (F. H.). Exact Methods in Sociology. Pop. Sci. Monthly, Dec.

GRABSKI (Stanislaus). Der polnische Nationalökonom Graf Friedrich Skarbek. Zeitschr. f. Volksw., Soz.-Pol. u. Verw., 8, Heft 5. [Skarbek, born 1792, died 1869, was the founder of "Smithianismus" in Poland.]

MAROUSSEM (P. du). Comment le point de vue concret se maintient, au cours de l'étude d'une question. Rev. d'Écon. Pol., Nov. [On matters of definition: travail, capital, valeur. The paper is part of a volume on Les Enquêtes (Pratique et théorie) announced for early publication.]

MONTEMARTINI (G.). Ueber die Theorie der Grenzproduktivität. Zeitschr. f. Volksw., Soz.-Pol. u. Verw., 8, Heft 5. [Substantially a summary of the writer's book cited above.]

TRUCHY (H.). Le libéralisme économique dans les œuvres de Quesnay. Rev. d'Écon. Pol., Dec. [Quesnay found to be a sane and not uncompromising "liberal."]

VALENTI (G.). La terra libera e la generazione del profitto. Giorn. degli Econ., Nov., Dec. [In refutation of Loria's doctrines.]

WINIARSKI (L.). La teoria della proprietà e della famiglia. Saggio sulla mecanica sociale pura. Riv. Ital. di Sociol., Oct.

II. SOCIAL QUESTIONS, LABOR AND CAPITAL.

BRENTANO (Lujo). Reaktion oder Reform? Gegen die Zuchthausvorlage. Berlin: Verlag der "Hilfe." 8vo. .80 m.

[Reprint of articles in *Soziale Praxis*, on "positive und negative Gewerkvereinspolitik"; *i.e.*, the recent German bill for punishing criminally certain kinds of labor union action.]

BURKE (W. M.). History and Functions of Central Labor Unions. New York: Macmillan Co. 8vo. pp. 125. $1.

[In Columbia University Studies; chiefly on the Central Labor Unions of American cities, with description also of the British Trade Union Congress.]

CHANTEAU (F.). Les plaies sociales. Vagabondage et mendicité. Paris: A. Pendone. 18mo. 3.50 fr.

FLYNT (J.). Tramping with Tramps. Studies and Sketches of Vagabond Life. With prefatory note by Andrew D. White. New York: The Century Co. 8vo. pp. 412. $1.50.

[The author, a man of education, studied the habitual vagabonds by living their life; chiefly in the United States, partly in Europe also. Some of the papers have previously appeared in magazines. The general conclusion is for systematic and stern repression.]

*GILMAN (N. P.). A Dividend to Labor. A Study of Employers'

Welfare Institutions. Boston: Houghton, Mifflin & Co. 8vo. pp. 407. $1.75.

[Part I. The Modern Employer; holding that "the labor contract should be moralized." Part II. An Indirect Dividend to Labor; describing "welfare institutions" in the leading countries, and with much new information as to the United States. Part III. A Direct Dividend to Labor; giving later information on profit-sharing than is in the author's book on that subject (1889)].

KULEMANN (W.). Die Gewerkschaftsbewegung. Darstellung der gewerkschaftlichen Organisation der Arbeiter und Arbeitgeber aller Länder. Jena: G. Fischer. 8vo. pp. 352. 10 m.

[A handbook, describing systematically the organizations of workmen and of employers so far as bearing on relations with workmen in the principal countries. A second volume on questions of principle is to follow.]

LANDOLT (C.). Wohnungsenquête in der Stadt Bern. Im Auftrag der städtischen Behörden bearbeitet. Bern: Neukomm & Zimmermann. 8vo. pp. lv, 712, 2 charts. 12 m.

OFFICE DU TRAVAIL, BELGIUM. Annuaire de la législation du travail. 2e année, 1898. Brussels: O. Schepens et Cie., agents. 8vo. pp. 387. 1.70 fr.

[This useful compilation gives, in French, the text of labor laws enacted in 1898 in the important countries of Europe, in the United States, and in British colonies.]

OFFICE DU TRAVAIL, FRANCE. Les associations professionnelles ouvrières. Tome I. Agriculture, mines, alimentation, produits chimiques, industries polygraphiques. Paris: Impr. Nat. 8vo.

[The series of which this is the first volume will describe labor organizations, and especially trade-unions (syndicats). A general introduction precedes the account of the trades included in this instalment.]

PAYEN (F.). Une tentative récente d'organisation du travail: Les conseils de l'industrie et du travail en Belgique. Paris: A. Rousseau. 8vo. pp. 250. 4 fr.

[A Belgian law of 1889 organized these councils, having the powers, among others, of a court of conciliation. It is here concluded that they should be relieved of this function, which should be entrusted to "conseils d'usine"; the existing councils retaining advisory and administrative powers.]

SALVATORE (A.). Legge e regolamento per gli infortunii degli operai sul lavoro . . . ad uso degli industriali e degli uomini di legge. Milan: U. Hoepli. 16mo. pp. 302.

[The author is vice-secretary in the ministry of agriculture and commerce; the book explains the Italian Act of 1898.]

SCHWIEDLAND (Dr. E.). Ziele und Wege einer Heimarbeits-Gesetzgebung. Vienna: Manz. 8vo. pp. 199. 4 m.

[Report prepared for the Austrian Ministry of Commerce, enumerating and describing legislation in various countries for the regulation of industries carried on at homes.]

In Periodicals.

BARNETT (S. A.). Charity versus Outdoor Relief. Nineteeth Cent., Nov. [An argument for the abolition of out-relief, based on the experience of Whitechapel, by the late warden of Toynbee Hall.]

FOLKS (Homer). Municipal Charities. Munic. Affairs, Sept. [A general paper, read before the League of Municipalities; with conclusions, *e.g.*, against outdoor relief, against subsidies to private charity, for separation of departments.]

FUHR (E. A.). Ueber Gewinnbeteiligung in der deutschen Grossindustrie. Zeitschr. f. ges. Staatsw., 55, Heft 4. [Familiar cases in other countries rehearsed, and profit-sharing commended for Germany.]

GEORGE (J. E.). Die Verhältnisse

des Kohlenbergbaus in den Vereinigten Staaten, mit bes. Bezugnahme auf die Lage der Bergarbeiter seit 1885. Jahrb. f. Nat. Oek., 18, Heft 4, 5. [A brief sketch of the growth of the industry, with longer discussion of labor conditions, strikes, organizations, dealings with employers.]

KELLEY (Florence). Aims and Principles of the Consumers' League. Amer. Journ. of Sociol., Nov. [Description of the National Consumers' League and summary of aims of the movement.]

MAC GREGOR (G.). Compulsory Arbitration at Work. Nat. Rev., Oct. [An unfavorable account of the working of the New Zealand act.]

MOLINARI (G. de). La guerre civile du travail et du travail. Journ. des Écon., Sept. [Chiefly on the trade-union movement in England and the United States; not unsympathetic in tone.]

ROCQUIGNY (Cte de). Une enquête sur les boulangeries co-opératives rurales. Musée Social, Dec. [Some 500 such societies exist in rural France.]

SAYOUS (A. G.). Les travailleurs de l'aiguille dans l'East End de Londres vers la milieu du XIX^e^ siècle. Rev. d'Écon. Pol., Nov.

SHAW (Edith M.). The Workhouse from the Inside. Contemporary Rev., Oct. [The experiences of an English workhouse nurse.]

SILBERMANN (J.). Zur Entlohnung der Frauenarbeit. Jahrb. f. Gesetzg., 23, Heft 4. [Systematic inquiry as to pay of shop-girls and the like employees in Germany.]

VOIGT (A.). Gesundheitsverhältnisse im Gross- und Kleinbetrieb. Jahrb. f. Gesetzg., 23, Heft 4. [An inquiry based on statistics gathered by the sick insurance associations of Vienna, with the conclusion that health is better in small establishments.]

WILLOUGHBY (W. F.). Foreign Labor Laws. Bulletin Dept. of Labor, Nov. [Summary of legislation in force on protection to laborers, labor organizations, arbitration, labor bureaus. . . .]

———. The Modern Movement for the Housing of the Working Classes in France. Yale Rev., Nov. [With list of the societies for building workingmen's houses, and account of the legislation for promoting the movement.]

UNSIGNED. Old Age Relief. Edinburgh Rev., Oct. [A review of the Reports of recent English parliamentary Committees, with further suggestions.]

III. SOCIALISM.

ADLER (Georg, Professor in Berlin). Geschichte des Sozialismus und Kommunismus von Plato bis zur Gegenwart. Theil I.: bis zur französischen Revolution. Leipzig: C. L. Hirschfeld. 8vo. pp. 291. 8 m.

[Published as a volume of the Hand- und Lehrbuch der Staatswissenschaften: to be completed in two parts. Communism is treated in the several books as the outcome of I. Ethische Reformbewegung des Alterthums; II. Religiöse Bewegung im Alterthum; III. Christlich-reformatorische Tendenzen; IV. Lebensideal von Renaissance und Kommunismus; V. Naturrechtliche und weltbürgerliche Ideale. The current of thought is mainly followed, but each book is introduced with a sketch of economic conditions.]

BIEDERMANN (K., Professor in Leipzig). Vorlesungen über Socialismus und Socialpolitik. Breslau: S. Schottländer. 8vo. pp. 205. 3 m.

GONNER (E. C. K.). The Social Philosophy of Rodbertus. London and New York: Macmillan. 8vo. pp. 230.

[Professor Gonner, of University College, Liverpool, here gives an able and full summary of Rodbertus's teaching, with comment

and criticism at once sympathetic and judicial. Part I. Society, its Nature, Growth, Difficulties; Part II. Fundamental Economic Conceptions; Part III. The State as an Industrial Organism.]

GRAVE (J.). L'anarchie, son but, ses moyens. Paris: Stock. 18mo. pp. 336. 3.50 fr.

KAUTSKY (K.). Bernstein und das sozialdemokratische Program. Eine Antikritik. Stuttgart: J. H. W. Dietz. 8vo. pp. 203. 2 m.

[A reply to Bernstein's book of 1899; the strict Marxian doctrines are upheld as against him.]

RANDALL (E. O.). History of the Zoar Society from its Commencement to its Conclusion: A Sociological Study in Communism. Columbus, Ohio: F. J. Heer. 8vo. pp. 100. Illustr. $1.25.

[Reprinted from the Publications of the Ohio Archæological and Historical Society. The Zoar Society, founded in 1818, gave up its communistic organization in 1898, the property being divided. This account is authoritative.]

SEUFFERT (H., Professor in Bonn). Anarchismus und Strafrecht. Berlin: O. Liebmann. 8vo. pp. 223. 4.50 m.

STAMMHAMMER (J.). Bibliographie des Socialismus und Communismus. Band II. Jena: G. Fischer. 8vo. pp. 403. 13 m.

[A supplement to the Bibliography published in 1893, filling gaps then left and bringing the data to the close of 1898.]

SULZER (G.). Die Zukunft des Sozialismus. Dresden: V. Boehmert. 8vo.

[An exposition of the collectivist ideal, whose realization is assured by the social revolution already begun.]

IV. LAND.

BÖTTGER (H.). Die Sozialdemokratie auf dem Lande. Ein Beitrag zur deutschen Agrarpolitik. Leipzig: E. Diederichs. 8vo. pp. 155. 2 m.

*CROOKES (W.). The Wheat Problem. With chapters on the Future Wheat Supply of the United States, by C. Wood Davis and J. Hyde. New York: G. P. Putnam's Sons. 12mo. $1.

[Based on Sir W. Crookes's address before the British Association in 1898, predicting the exhaustion of wheat lands in the not distant future, and looking to food supplies by chemical advances. The chapters by the American writers are tacked on to his discussion.]

HAGGARD (H. R.). A Farmer's Year: His Commonplace Book for 1898. London: Longmans. 8vo. 2 maps, 36 illus. pp. 510. 7*s.* 6*d.*

[A most interesting picture of "the decrepit state of the farming and attendant industries in eastern England" by the well-known novelist.]

HECHT (F.). Der europäische Bodenkredit. Erster Band: Die Entschuldung des ländlichen Grundbesitzes.— Die Entwickelungsgeschichte der staatlichen und provinziellen Bodenkredit-Institute in Deutschland seit 1890. Leipzig: Duncker & Humblot. 8vo. pp. 472. 10 m.

[The author, manager of the Rheinische Hypothekenbank, published in 1892 a book in two volumes on state and provincial Bodenkredit-institute of Germany.]

JENTSCH (C.). Die Agrarkrisis. Besteht eine solche, und worin besteht sie? Leipzig: F. W. Grunow. 8vo. pp. 183. 2.50 m.

[A popular summary, maintaining that agricultural depression is exaggerated, and that small proprietors should be sustained by legislation as against large.]

*KAUTSKY (Karl). Die Agrarfrage. Eine Uebersicht über die Tendenzen der modernen Landwirthschaft und die Agrarpolitik der Sozialdemokratie. Stuttgart:

J. H. W. Dietz. 1899. 8vo. pp. 459. 5 m.

[A methodical inquiry, from the Marxist point of view, of agrarian development in modern time; concluding that, in agriculture as in manufactures, great enterprises absorb the small. Concessions by socialists to peasant-proprietorship are opposed.]

KIRCHNER (W., Professor in Leipzig, Rektor). Die Entwickelung der Landwirthschaft im 19 Jahrhundert. Rektoratsrede. Leipzig: A. Edelmann. 4to. pp. 31. 1 m.

LIST (A.). Die Interessen der deutschen Landwirtschaft mit besonderer Berücksichtigung des Brotgetreidebaus im deutsch-russischen Handelsvertrag von 1894. Stuttgart: Cotta. 8vo. 4 m.

[In Münchener Volksw. Studien. Mainly an account of the Russo-German treaty, of the expectations as to its effects, and of the actual outcome.]

SOUCHON (A.). La propriété paysanne. Étude d'économie rurale. Paris: Larose. 8vo. pp. 258.

[Professor Souchon, of the Law Faculty of Lyons, here investigates "la moyenne propriété paysanne," with special regard to France, but with reference also to English and German legislation for promoting small holdings. He finds such proprietorship strong and slowly growing in France: some legislation, of secondary importance (*e.g.*, tax reforms), might aid it. The book is sane and thorough.]

In Periodicals.

BLONDEL (G.). La politique agraire en Allemagne d'après de récents ouvrages. Rev. d'Écon. Pol., Nov. [Summary and review of L. Brentano's Agrarpolitik and Gesammelte Aufsätze.]

BUCHENBERGER (K.). Oesterreich's Agrarpolitik seit der Grundentlastung. Zeitschr. f. ges. Staatsw., 55, Heft 4. [Review of Schiff's book: a second part of the review is to follow.]

DALLA VOLTA (R.). Une œuvre posthume de M. Ugo Rabbeno. La question foncière dans les colonies de l'Australie. Rev. d'Écon. Pol., Nov.

HOLMES (G. K.). Some of the Economic Conditions of the Farmer. Yale Rev., Nov. [The average earnings of the farming population; the use of fertilizers; agricultural machinery; co-operation. . . .]

SCHMID (H.). Das schweizerische Bauernsekretariat und seine Programmarbeit: Zum landwirthschaftlichen Arbeitermangel in der Schweiz. Jahrb. f. Gesetzg., 23, Heft 4. [Brief note on the developing scarcity of agricultural labor.]

SERING (M.). Die Agrarfrage und der Sozialismus. Jahrb. f. Gesetzg., 23, Heft 4. [Prolonged review of Kautsky's book, concluding that socialism has nothing to offer to the peasant.]

V. POPULATION, EMIGRATION, AND COLONIES.

DEMARET (E.). Organisation coloniale et fédération. Une fédération de la France et de ses colonies. Préface de E. Etienne. Paris: Girard et Brière. 8vo. 5 fr.

[Examines the systems of (1) colonial subjection, (2) colonial autonomy, (3) federative organization, and concludes in favor of the third, proposing a plan for the reorganization of the French colonial system on this basis.]

ZIMMERMANN (A.). Die Colonialpolitik Grossbritanniens. 2 Theil. Vom Abfall der Vereinigten Staaten bis zur Gegenwart. Berlin: Mittler & Sohn. 8vo. pp. 422. 9 m.

[The third volume of a work on European colonies. Vol. I., on Portuguese and Spanish colonies, appeared in 1896; Vol. II., on British colonies before 1776, in 1898. The treatment is statistical

and descriptive, as well as historical; the survey thorough.]

In Periodicals.

ANTON (G. K.). Neuere Agrarpolitik der Hollander auf Java. Jahrb. f. Gesetzg., 23, Heft 4. [A judicial account of the change by which, in the last generation, the government culture system has given way, in part, to free private industry.]

VI. TRANSPORTATION AND EXCHANGE.

BURMEISTER (H.). Geschichtliche Entwickelung des Gütertarifwesens der Eisenbahnen Deutschlands. Beitrag zum Verständniss der Tariffrage der Gegenwart. Leipzig: Duncker & Humblot. 8vo. pp. 66. 1.40 m.

CAMPREDON (Eugène, ingénieur). Le rôle économique et social des voies de communication. Paris: Ch. Dunot. 16mo. pp. 515, maps. 10 fr.

[A summary covering too much ground to permit of detail. The subjects of the chapters are: les routes, les voies navigables, les voies maritimes (with extended historical sketch), le rôle social. On the United States there is frequent inaccuracy.]

HARDESTY (Jesse). The Mother of Trusts. Railroads and their Relation with the Man with the Plow. Kansas City: Hudson Kimberly Co. 12mo. pp. 262. $1.

[The "Mother of Trusts" is the private ownership of railways, and the book is an argument for State ownership, presented with no novelty in reasoning or in the information. Newspaper matter is largely quoted.]

JAUNEZ (V., docteur en droit). La navigation intérieure en Allemagne. Paris: Giard et Brière. 8vo. 5 fr.

LANGSTROTH (C. S.) and STILZ (W.). Railway Co-operation. An Investigation of Railway Traffic Associations and a Discussion of the Degree and Form of Co-operation that should be granted Competing Railways in the United States. With Introduction by M. A. Knapp, chairman of the Interstate Commerce Commission. Boston: Ginn & Co. 8vo. pp. 210. $1.

[Two prize essays, published for the University of Pennsylvania, where they were prepared. Both essays conclude that pooling should be permitted, subject to control by the Interstate Commerce Commission.]

MOTT (E. H.). Between the Ocean and the Lakes: The Story of Erie. New York: J. S. Collins. 4to. pp. 550. Illustr. $7.

[A history of the Erie Railway, including an account of its construction, of the Drew-Vanderbilt-Gould period, and of recent administrations; with much personal anecdote.]

SANBORN (J. B., Ph.D.). Congressional Grants of Land in Aid of Railways. Madison, Wis. 8vo. pp. 130. 50 cts.

[No. 30 of Bulletins of the University of Wisconsin. A succinct narrative of the legislation, and of the discussion that led to it; with appendices on the uses made of the grants and on the literature of the subject.]

WILLARD (Charles D.). The Free Harbor Contest. Los Angeles, Cal. 8vo. pp. 210. $1.50.

["The story of a long and desperate contest between the Southern Pacific Railroad and the people of Southern California"; the bone of contention being the site of a harbor for improvement by the federal government,—now settled to be San Pedro.]

In Periodicals.

BALTZER (F.). Die Verkehrsver-

hältnisse und Eisenbahnen von Tokio, und der Entwurf zu einer Hochbahn daselbst. Archiv f. Eisenb., Dec.

BEMIS (E. W.). Detroit's Efforts to own her Street Railways. Munic. Affairs, Sept. [The author was agent of the Commission which sought to secure such ownership. He believes the scheme had financial promise.]

CROWELL (J. F.). The Sugar Situation in the Tropics. Pol. Sci. Quarterly, Dec. [A statistical survey, with consideration of the possibilities of the new American dependencies.]

DEICHEN (F.). Die Kommunalisierung der Strassenbahnen in Deutschland. Eine politischoekonomische Studie. Zeitschr. f. ges. Staatsw., 55, Heft 3. [The situation surveyed; electric power expected to promote municipal enterprise, which the writer commends.]

KEASBEY (L. M.). Need of Interoceanic Communication. Pol. Sci. Quarterly, Dec. ["Complete the circuit of civilization by cutting the Nicaragua Canal."]

SCHUMACHER (H.). Eisenbahnbau und Eisenbahnpläne in China. Archiv f. Eisenb., Oct., Dec. [Not only railway plans, but the general conditions of transportation are reviewed. Further articles are to follow.]

VII. INTERNATIONAL TRADE AND CUSTOMS LAWS.

CHAPMAN (S. J.). History of Trade between the United Kingdom and the United States. With special reference to the effect of Tariffs. [Social Science Series.] London: Sonnenschein; New York: Scribner's. 8vo. pp. 136. $1.

REBOUD (P.). Essai sur les changes étrangers. Paris: A. Rousseau. 18mo. 5 fr.

[The author is chargé d'économie politique at Grenoble.]

ROOT (J. W.). Tariff and Trade. London: Simpkin. 8vo. pp. 468. 10*s.* 6*d.*

WILLIAMS (E. E.). The Case for Protection. London: Richards. 8vo. pp. 304. 5*s.*

[The author of "Made in Germany" presents familiar arguments for protective tariffs, and proposes a custom union for all British possessions, with differential duties on foreign products.]

VIII. MONEY, BANKING, CREDIT, AND PRICES.

BEAURE (A.). Théorie et pratique de la monnaie. Tome II.: Histoire de la politique monétaire. Statistique des frappes et mouvements des métaux précieux dans les principaux pays. Paris: Guillaumin. 8vo. pp. 208. 5 fr.

[Vol. I. appeared in 1898.]

GILMAN (Theodore). Federal Clearing Houses. Boston: Houghton, Mifflin & Co. 16mo. pp. 289. $1.

[A further and more careful statement of the author's plan for a bank-note issue, already set forth in his volume on "A Graded Banking System" (1898). Notes are to be issued, against the deposit of securities with Clearing-house associations of banks, and with a guarantee of payment by such associations. The text of the proposed statute is given, with abundant discussion.]

MAYNC (R., Dr.). Der Diskont. Jena: G. Fischer. 8vo. 3.50 m.

[In Conrad's Abhandlungen.]

OBST (G.). Lehrbuch des Geld-, Bank-, und Börsenwesens. Ein Handbuch für Handels- und Fortbildungsschulen sowie zur Selbstbelehrung. Stuttgart: Strecker & Schröder. 8vo. pp. 191. 2.80 m.

SAYOUS (A. E.). De la création en Suisse d'une banque centrale d'émission. Bulletin du Musée Social, Nov. [A careful account of the bill now pending. Also printed separately, in pamphlet form, by A. Rousseau, Paris. pp. 73. 1 fr.].

In Periodicals.

BROUILHET (Ch.). Le nouveau régime de la Banque de France. Loi du 17 Nov. 1897. Rev. d'Écon. Pol., Sept., Nov.

COLE (W. A.). The Relations between Banks and Stock Exchanges. Journ. Inst. of Bankers, Oct. [Stock exchange loans in England described, with reference to the legal complications, and brief comparison with German methods.]

CONANT (C. A.). The Evolution of Modern Banking. Pol. Sci. Quarterly, Dec. [The evolution is towards wide extension of banking credits (notes and deposits) convertible into coin on demand.]

DENIS (H.). L'Union du Crédit de Bruxelles. (Suite.) Rev. d'Écon. Pol., Sept.

LEXIS (W.). Neuere Literatur über Münz- und Geldwesen. Schluss. Jahrb. f. Nat. Oek., 18, Heft 4. [Conclusion of a review of some publications, begun in vol. 17.]

MEADE (E. S.). The Recent Production of Silver and its Probable Future. Annals Amer. Acad. Pol. and Soc. Sci., Nov. [The possibilities of production found to be large; but the adoption of the silver standard by the United States not expected to bring a price level corresponding to the present value of silver.]

SAYOUS (A. E.). Les conditions et les fonctions d'une circulation fiduciaire selon un compatriote et contemporain de Law. Rev. d'Écon. Pol., Dec. [This contemporary is James Armour, whose writings and proposals are analyzed.]

———. De l'origine des "cash-credits" des banques écossaises. Journ. des Écon., Nov. [The origin traced to certain action by the Royal Bank in 1728.]

IX. FINANCE AND TAXATION.

COHN (Dr. S.). Die Finanzen des deutschen Reichs seit seiner Begründung. In den Grundzügen dargestellt. Berlin: J. Guttentag. 8vo. pp. 225. 5 m.

[The Empire's revenues and expenditures analyzed, with statistics for 1872–99, arranged according to the budget classification. The finances of the several States are not touched.]

HILL (J. A.). The English Income Tax, with Special Reference to Administration and Method of Assessment. Published for Amer. Econ. Assoc. New York: Macmillan Co. 12mo. pp. 149. $1.

[An excellent monograph, based largely on investigation on the spot, authoritative on its special subject. An appendix reprints forms of official documents and gives abundant statistics.]

STEIGER (Jac., Dr.). Betrachtungen über den Finanzhaushalt der Kantone und ihre Beziehungen zum Bund. Aus Zeitschr. f. schweiz. Statistik. Bern: Schmid & Franke. 4to. pp. 113. 2.50 m.

*TRINQUAT (M.). De l'amortissement des emprunts d'état. Paris: Guillaumin. 18mo. pp. 392. 8 fr.

[Part I. covers the theory of the subject, and Parts II. and III. the several modes of winding up public debts: by sinking funds (1) à interêt composé, (2) fondé sur ressources budgétaires, (3) contractuel et automatique, par annuités. French, English, American, and German legislation and experience are analyzed.]

WELLS (D. A.). The Principles of Taxation. New York: D. Appleton & Co. 12mo. $1.50.

[The chapters of which this volume is made up have been printed in the *Popular Science Monthly*. They restate at large the author's well-known views.]

In Periodicals.

CREANGA (G. D.). Die Finanzen Rumäniens. Finanz-Archiv, 16, Band 2. [General survey of the period since 1859.]

FIK (H.). Die deutsche Wehrsteuerfrage. Mit einem Entwurf eines den jetzigen Verhältnissen entsprechenden Wehrsteuergesetzes. Finanz-Archiv, 16, Band 2.

KÖLLE (A.). Zur Entstehung der Ertrags- und Katastersteuern in den deutschen Staaten. Finanz-Archiv, 16, Band 2. [On the transition from a property tax to a cadastral tax, chiefly in the 16th and 17th centuries.]

MAROUSSEM (Pierre du). Les réformes démocratiques de l'impôt. Que penser du projet d'impôt dégressif sur le revenu? Rev. d'Econ. Pol., Sept. [Criticising and opposing the current ministerial proposal of an "impôt global."]

ORTLOFF (H.). Vorschläge zur Abänderung der Einkommensteuergesetze. Jahrb. f. Nat. Oek., 18, Heft 4, 5. [On an amended act in Weimar, and on some aspects of double taxation in the different German States.]

PABST (F.). Zur Beseitigung der kommunalen Grund- und Gebäudesteuer. Betrachtungen eines Hausbesitzers. Zeitschr. f. ges. Staatsw., 55, Heft 4.

RAUSCHENPLAT. Die Steuerreform im Herzogtum Braunschweig. Finanz-Archiv, 16, Band 2. [Following closely the example of Prussia, Brunswick has established an income tax, a supplemental property tax, a business tax. The text of the statutes is printed in full.]

UNSIGNED. Hamburger Gesetz betreffend die Einkommensteuer, 1895. Finanz-Archiv, 16, Band 2. [Text of the act, with the Begründung. A system of coefficients bringing progressive rates is an interesting feature.]

X. HISTORY, BIOGRAPHY, AND DESCRIPTION.

AVENEL (Vicomte G. d'). Histoire économique de la propriété, des salaires, des denrées, et de tous les prix en général depuis 1200 jusqu'en 1800. Paris: E. Leroux. 4 vols. 8vo. Each 700 to 900 pp. 48 fr.

[Crowned by the Academy of Moral and Political Sciences, and published under the auspices of the Ministry of Education. Vol. I., on money, credit, interest, and Vol. II., on land, were published in 1894. Vols. III. and IV., now added, deal with wages, prices of food and lodging and the like. There are numerous and elaborate tables.]

*BORGIUS (W.). Deutschland und die Vereinigten Staaten. Ein handelspolitischer Rückblick bei Eröffnung des internationalen Handels Kongresses zu Philadelphia. Berlin: J. Guttentag. 8vo. pp. 132. 3 m.

[Published by the Centralstelle für Vorbereitung von Handelsvertrügen.]

CARLI (Dott. Mario). Il Ce-Kiang. Studio geografico-economico. Roma: Forzani e C. 8vo. pp. 278. 5 l.

[Systematic account of the geography, products, means of communication, and industrial centres of the Chinese province in which Italy has established a "sphere of influence." Announced in the preface as a first instalment of a work of the same sort on the whole of China.]

DILL (S.). Roman Society in the Last Century of the Western Empire. London: Macmillan. 8vo. pp. 488. 8s. 6d.

[Contains in Book III., chap. ii.,

an account of the condition and distribution of landed property, based on the original authorities.]

EBERSTADT (R.). Das französische Gewerberecht und die Schaffung staatlicher Gesetzgebung und Verwaltung in Frankreich vom 13 Jahrhundert bis 1581. Beitrag zur Entstehungsgeschichte der vollkommenen Staatsgewalt. Leipzig: Duncker & Humblot. 8vo. pp. 466. 11.80 m.

[In Schmoller's Forschungen.]

* KRAUS (V. F.). Die Wirthschafts- und Verwaltungspolitik des aufgeklärten Absolutismus im Gmundener Salzkammergut. Freiburg: J. C. B. Mohr. 8vo. pp. 177, charts, tables. 6 m.

[In Wiener Staatsw. Studien.]

MACKAY (Thomas.). A History of the English Poor Law, 1834 to 1898. London: P. S. King & Son. 8vo. pp. 620. 21*s.*

[A supplementary volume (Vol. III.) to Nichols's History of the Poor Law, of which a revised edition was issued by the same firm in 1898. The treatment is less narrative and more continuously concerned with questions of principle than in the earlier book.]

MARTIN (G.). Histoire de l'industrie en France. Paris: A. Fontemoing. 8vo. 1.50 fr.

[A bibliography only; in the series of Bibliothèque de bibliographies critiques, published by the Société des études historiques.]

MATLEKOVITS (A. v.). Das Königreich Ungarn. Volkswirthschaftlich und statistisch dargestellt. Leipzig: Duncker & Humblot. 2 vols. 8vo. pp. 652, 965. 36 m.

MICHEL (Georges). Léon Say: sa vie et ses œuvres. Paris: C. Lévy. 8vo. 7.50 fr.

MOHR (P.). Die Entwickelung des Grossbetriebs in der Getreidemüllerei Deutschlands. Berlin: Siemenroth & Troschel. 8vo. pp. 303. 6.50 m.

[A monograph prepared under suggestions from Professors Sering and Schmoller. The period from 1807 to 1900 is covered. The development of factory production, the decline of small mills, the projects for aiding small mills by progressive taxation of the large, the effects of protective duties, are dealt with.]

OFFICE DU TRAVAIL, BELGIUM. Les industries à domicile en Belgique. Vol. I. L'industrie armurière Liégeoise, par M. Ansiaux; l'industrie du vêtement à Bruxelles, par E. Jardieu; l'industrie coutelière de Gembloux, par C. Génart. Brussels: O. Schepens et Cie., agents. 8vo. pp. 382.

[First instalment of the results of a general inquiry, conducted in accord with a systematic plan, which is printed by way of introduction.]

POWELL (E.) and TREVELYAN (G. M.), editors. Peasants' Rising and the Lollards: A Collection of Unpublished Documents, forming an Appendix to Trevelyan's "England in the Age of Wycliffe." London: Longmans. 8vo. 6*s.*

RADZIWILL (Dr. Carl, Prinz). Entwickelung des fürstl. stolbergischen Grundbesitzes seit dem XIII. Jahrhundert mit besond. Beachtung der Grafschaft Wernigerode. Jena: G. Fischer. 8vo. pp. 176, charts. 3 m.

[In Conrad's Abhandlungen.]

SCHULZE-GÄVERNITZ (G. v.). Volkswirthschaftliche Studien aus Russland. Leipzig: Duncker & Humblot. 8vo. pp. 626. 12.60 m.

[Contents: Der ältere Merkantilismus.— Die mittelrussische Baumwollindustrie.— Die Slavophilen und die Panslavisten.— Die Handelspolitik der achtziger Jahre.— Agraria.— Die Währungsreform.]

SIEVEKING (H., Priv. Doz.). Genueser Finanzwesen, mit besonderer Berücksichtigung der Casi di S. Giorgio. II. Die Casa di S. Giorgio. Freiburg: J. C. B. Mohr. 8vo. pp. 274. 6 m.

[In Abhand. der badischen Hochschulen.]

TOMBESI (Ugo). L' evoluzione di un' industria italiana. La tessitura serica á Como. Pesaro: tip. G. Federici. 8vo. pp. 83. 2 l.

[Origin, history, and growth of the silk industry at Como, with

notes as to the working of tariff duties, and as to the transformation wrought of late by the power-loom.]

TREFZ (Fr., Dr.). Das Wirthschaftsgewerbe in München. Stuttgart: Cotta. 8vo. 5 m.

[In Münchener Volksw. Studien. The inquiry is chiefly on the social aspects of the industry,—labor conditions, fees and wages, women attendants, and the like.]

TREVELYAN (G. M.). England in the Age of Wycliffe. London: Longmans. 8vo. pp. 380.

[Contains a discussion of the relations between Lollardry and social discontent, and a map of the area affected by the Peasant Risings of 1381.]

WILLSON (Beckles). The Great Company: Being a History of the Honorable Company of Merchants-Adventurers trading into Hudson's Bay. Toronto: The Copp, Clark Co.; New York: Dodd, Mead & Co. 8vo. pp. 541. Maps and illustr. $5.

[A chronicle compiled from no recondite sources, with attention chiefly to the mere picturesque aspects. Little is said on the strictly economic questions.]

In Periodicals.

ARNDT. Einige Bemerkungen über das Bergregal. Jahrb. f. Gesetzg., 23, Heft 4. [Historical inquiry as to the origin of German law on mineral lands: controverting certain views of A. Zycha's.]

SALVIOLI (G.). Gli esordi dell' agricoltura. Riv. Ital. di Sociol., Oct.

SCHMOLLER (G.). Die englische Handelspolitik des 17 und 18 Jahrhunderts. Jahrb. f. Gesetzg., 23, Heft 4. [A general essay paralleling the author's previous papers on the mercantile system at large.]

XI. STATISTICS.

CONRAD (J.). Grundriss zum Studium der politischen Oekonomie. Vierter Theil: Statistik. I. Die Geschichte und Theorie der Statistik. Die Bevölkerungslehre. Jena: G. Fischer. 8vo. pp. 162.

[A further instalment of the author's Grundriss, designed primarily for university students. Three parts — Nationaloekonomie, Volkswirthschaftspolitik, Finanzwissenschaft — have already appeared.]

• EULENBURG (Fr.). Zur Frage der Lohnermittelung. Eine methodologisch-statistische Untersuchung. Jena: G. Fischer. 8vo. pp. 150. 3 m.

[The author, docent in Leipzig, examines the method of a large series of German, English, and American statistical inquiries on wages, summarizes their results, and makes proposals for improvements in method.]

FRANCE, OFFICE DU TRAVAIL. Résultats statistiques du récensement des industries et professions d'après le dénombrement de la population in 1896. Tome I. 8vo. pp. 906. Paris: Impr. Nationale

[The first instalment, covering Paris only, of a publication embodying the results of a comprehensive inquiry on occupations in France.]

GERMANY, Statistical Bureau. Gewerbe und Handel im deutschen Reich. Berlin: Puttkammer & Mühlbrecht. 4to. pp. 256, 314. 8 m.

[This volume, No. 119 of Statistik des deutschen Reichs, completes the summarizing discussion of the results of the great census in 1895, of which the detailed statistics have been published in previous volumes. Two previous volumes of text dealt with agriculture and with occupations.]

GREAT BRITAIN, LABOUR DEPARTMENT. First Annual Abstract of Labour Statistics. London: Eyre

& Spottiswoode. 8vo. pp. 149. 8*d*.

[The first of a series to be continued annually, giving statistical information as to Wages, Hours of Labor, Trade Disputes, and Co-operation. From five to twelve countries are included as to these subjects.]

In Periodicals.

FLODSTRÖM (J.). Einige Hauptgesichtspunkte der allgemeinen Handelsstatistik. Allg. Statist. Archiv, 5, Halbband 2. [On the arrangement and subject-matter of statistics of international trade.]

KOLLMANN (P.). Die soziale Zusammensetzung der Bevölkerung im deutschen Reiche nach der Berufszählung von Juni, 1895. II. Jahrb. f. Gesetzg., 23, Heft 4. [A third instalment is to follow.]

MAYR (G. v.). Elektrische Auszählung und Social-Politik. Allg. Statist. Archiv, 5, Halbband 2. [Advocating the use of the machines. The head of the Prussian Statistical Bureau had opposed them, because depriving clerks of their work.]

———. Die Stoffordnung in der wissenschaftlichen Statistik. Allg. Statist. Archiv, 5, Halbband 2. [Reply to certain criticisms by Schaeffle; with criticism in turn of the scheme of the second edition of Schaeffle's "Bau und Leben."]

RAUCHBERG (H.). Die Berufs- und Betriebsaufnahme in Frankreich von 1896. Allg. Statist. Archiv, 5, Halbband 2. [Description of the methods of enumeration and compilation.]

ZIMMERMANN (Dr. R.). Die Ziele der deutschen Handelsstatistik. Zeitschr. f. ges. Staatsw., 55, Heft 3. [Defence of the official publications against certain criticisms.]

UNSIGNED. Statistics of Cities. Bulletin Dept. of Labor, Sept. [Statistics for 140 cities in the United States, as to population, death-rate, schools, debt, income, expenditures. . . .]

XII. REPRINTS, TRANSLATIONS, AND NEW EDITIONS.

ASHLEY (W. J.). Histoire et doctrines économiques de l'Angleterre. I. Le Moyen Âge. Traduit sur la 3e édition anglaise revue par l'auteur, par P. Bondois. Paris: Giard et Brière. 8vo. pp. 276. 5 fr.

[In Bibliothèque internationale d'économie politique.]

AUFSESS (O. v.). Die Zölle und Steuern, sowie die vertragsmässigen auswärtigen Handelsbeziehungen des deutschen Reiches. 5te stark vermehrte Auflage. Munich: G. Hirth. 8vo. 7 m.

[The 4th edition appeared in 1892. The new edition brings the matter to date by describing the new taxes on sugar and spirits, the new commercial treaties, and other recent changes.]

BAKER (C. W.). Monopolies and the People. Third edition, revised and enlarged. New York: G. P. Putnam's Sons. 8vo. pp. 368. $1.50.

[This edition reprints, without change, as Part I. (pp. 1-263) the matter of the first edition, published in 1889; and adds (pp. 264-362) Part II., on A Decade of Progress toward the Death of Competition, and Part III., on Evils from Recent Changes and their Remedy. The author, who is editor of the *Engineering News*, believes combination and monopoly inevitable in a great range of industries, and advocates public regulation. Various combinations, old and new, are briefly described.]

DEL MAR (A.). Les systèmes monétaires. Histoire monétaire des principaux états du monde anciens et modernes. Traduit par A. Chabry et C. Bessonet-Favre. Paris: Guillaumin. 4to. pp. 172. 5 fr.

DEMOOR (J.), MASSART (J.), and VANDERVELDE. Evolution by Atrophy, in Biology and Sociology. Translated by Mrs. Charles Mitchell. New York: D. Appleton & Co. 8vo. pp 335. $1.50.

[The French original appeared at Paris in 1897 (Alcan). The biological method is applied to sociology, the biological principles being first set forth in the successive chapters, the sociological applications following. Book I., Universality of Degenerative Evolution; II., The Path of Degenerative Evolution; III., Causes of Degenerative Evolution.]

GRAHAM (J. C.). Taxation, Local and Imperial, and Local Government. Third edition revised by M. D. Warmington. London: P. S. King & Son. 12mo. pp. 122. 2s.

[Brief account of local and imperial taxes in England; followed by a similar brief account of local government. The first edition was published in 1894.]

MENGER (A.). Le droit au produit intégral du travail. Traduit par A. Bonnet, avec préface de Ch. Andler. Paris: Giard et Brière. 18mo. 3.50 fr.

[The translation is from the second German edition of 1891. An English translation was published in 1899.]

NYS (E.). Researches in the History of Economics. Translated by N. F. and A. R. Dryhurst. London: A. & C. Black; New York: Macmillan. 8vo. pp. 372. $2.

[The French original was published at Brussels in 1898. An account mainly of economic conditions in the Middle Ages, not superior to Blanqui.]

* PETTY. The Economic Writings of Sir William Petty, together with Observations upon the Bills of Mortality, more probably by Captain John Graunt. Edited by Charles H. Hull, Professor in Cornell University. Cambridge, England: The University Press; New York: Macmillan Co. 2 vols. 8vo. pp. xci, 700. $6.

[The scholarly Introduction contains biographical accounts of Petty and Graunt, and papers on the authorship of the Bills of Mortality and on Petty's Economic Writings. All Petty's previously printed works are included, and a "Treatise on Ireland," as well as some fragments, are added from manuscripts.]

ROSCHER (W.). Nationalökonomik des Handels- und Gewerbefleisses. 7 Auflage, bearbeitet von W. Stieda. Stuttgart: Cotta. 8vo. pp. 1119.

[This new edition has been greatly amplified, and the information enlarged and brought to date, by the competent hands of Professor Stieda of Leipzig.]

XIII. NOT CLASSIFIED.

CHICAGO CONFERENCE ON TRUSTS. Speeches, Debates, Resolutions, List of Delegates, Committees, etc. Chicago: The Civic Federation. 12mo. pp. 626. $1.

[A report in detail of the Conference of Sept. 13–16, 1899; the papers and addresses, near hundred in number, of all degrees of merit and from all sorts of persons, being printed in full.]

* FOOTE (Allen R.). Municipal Public Service Industries. Chicago: The Other Side Publ. Co. 12mo. pp. 352. $1.

[Three papers, opposing public ownership and advocating corporate ownership under uniform and simple franchises. Little new is added to the author's previously published discussions.]

HANDWÖRTERBUCH des gesammten Versicherungswesens einschliesslich der socialpolitischen Arbeiterversicherung. I. Band. Unter Mitwirkung vieler Fachgenossen

herausg. von E. Baumgarten. Strassburg: Trübner. 8vo. pp. 803. 15 m.

[This first volume covers A-Blitzschadenversicherung, and includes such topics as Altersrente, Arbeitslosenversicherung, and the like. The dictionary promises to be of great utility.]

LUSK (H. H.). Our Foes at Home. New York: Doubleday & McClure Co. 12mo. pp. 297. $1.

[The author, some time member of the New Zealand Parliament, discusses current American problems, especially monopolies, railways, riches, taxation; contrasting American with Australasian conditions and advocating public ownership, abolition of party government, and the like.]

MAROUSSEM (P. du). Les enquêtes. Pratique et théorie. Paris: F. Alcan. 8vo. 6 fr.

[In Bibliothèque générale des sciences sociales.]

OERTMANN (Paul, Professor in Berlin). Die volkswirthschaftliche Bedeutung des bürgerlichen Gesetzbuches für das deutsche Reich. Fünf Vorträge. Frankfurt: J. S. Sauerländer. 8vo. p. 91.

RICHARDS (Ellen H.). The Cost of Living as modified by Sanitary Science. New York: J. Wiley & Sons. 12mo. pp. 124. $1.

[Mrs. Richards, instructor in the Massachusetts Institute of Technology, here gives judicious advice, chiefly for persons of moderate middle-class incomes, on household expenditure and operation, food, clothing, and the like.]

SMITH (E. J.). The New Trades Combination Movement: Principles, Methods, Progress. With introduction by J. Carter. London: Rivington. 8vo. pp. 120. 2*s*.

WALLACE (H.). Trusts and how to deal with them. Desmoines, Iowa: Wallace Publ. Co. 12mo. pp. 165. 25 cts.

[General denunciation, especially of railway discrimination. The matter does not rise above newspaper level.]

WASHINGTON (Booker T.). The Future of the American Negro. Boston: Small, Maynard & Co. 12mo. pp. 244. $1.50.

[The principal of the Tuskegee Institute here sums up his conclusions: no deportation, no lynch-law, no discrimination in the franchise, industrial training (especially for agriculture), and unremitting effort for the improvement of character.]

ZOEPFL (G., Dr.). Der Wettgewerb des russischen und amerikanischen Petroleums. Eine weltwirthschaftliche Studie. Berlin: Siemenroth & Troschel. 8vo. pp. 166. 4 m.

[The American Trust is found to be strongly intrenched in Germany, with the trade firmly organized and controlled. The author believes Russian competition desirable, and considers how it might be promoted by tariff and transportation favors. The account of the existing trade situation is thorough.]

UNSIGNED. Capitaldeckung und Umlageverfahren bei der Unfallversicherung in Oesterreich. Vienna: Manz. 8vo. pp. 230. 3 m.

[A series of opinions from experts — among them Borght, Landré, Lexis, Westergaard — on a change, under discussion in Austria, from fixed premiums to assessments. The opinions were sought and are published by the accident insurance association of Lower Austria.]

In Periodicals.

ACHARD (A.) Les finances et les services industriels de la ville de Genève. Rev. d'Écon. Pol., Sept. [A careful and instructive account of municipal management of gas, water, electric light, and power.]

AUERBACH (J.). The Legal Aspect of Trusts. North Amer. Rev., Sept. [Review of the United States Act of 1890, and some decisions of the Supreme Court on that act and on State laws. The general drift is against "hostile legislation"; the statement of the legal aspects not conclusive.]

BEMIS (E. W.). The Trust Problem: Its Real Nature. Forum, Dec. [Its "real nature" is permanent monopoly; and there is "no rapid road to its settlement."]

BOND (W.). Municipal Trading. Fortnightly Rev., Oct.

BROOKS (John G.). The Strength and Weakness of the Trust Idea. Engin. Mag., Dec. [The gain in productive efficiency from organization; secrecy the greatest evil; adequate managing ability hard to secure.]

HADLEY (A. T.). The Formation and Control of Trusts. Scribner's Mag., Nov. [Suggested modes of control: 1. Larger directors' responsibility; 2. Changes in the labor contract; 3. Care as to high import duties. Attempts to prohibit by law are futile.]

PORRITT (E.). British Municipal and Educational Legislation in 1899. Yale Rev., Nov. [London Government, Telephones, Small Dwellings Acquisition, Tithe Rent Charge. . . .]

TREMAIN (H. E.). Franchises or Monopolies. Their Public Ownership and Operation. Annals Amer. Acad. Pol. and Soc. Sci., Nov. [A plan for "joint public ownership" outlined; the public to retain a portion of the stock, and use the income for gradual purchase of the remainder.]

WOODRUFF (C. R.). Philadelphia's Water: A Story of Municipal Procrastination. Forum, Nov.

YOUNG (J. T.). Liberty *vs.* Efficiency. Yale Rev., Nov. [Efficiency in government to be secured by lessening "liberty"; *i.e.*, diminishing elections and concentrating executive power.]